



439082

THE WHITE HOUSE

WASHINGTON

January 11, 2001

Dear Mrs. Mossman:

Thank you for your warm holiday greetings and for your inquiry about additional information pertinent to your husband's case.

I deeply regret that there is nothing new to report, regarding your husband, from my visit to Vietnam. As you know, the fullest possible accounting for missing Americans has been the most important element of the normalization of our relations with Vietnam. In Hanoi, I told Vietnamese leaders -- and they confirmed their understanding -- that this issue will remain at the top of our agenda.

Again, thank you for your kind thoughts. As you requested, I am forwarding a signed photo separately.

Sincerely,

Bill Clinton ^f

Mrs. Dianne Mossman
2002 Foxmeadow Drive
Royersford, Pennsylvania 19468-1568

010112



To Dianne Mossman

Best Wishes, *Bill Clinton* ^A

010112

NATIONAL SECURITY COUNCIL

ID 0007846

REFERRAL

DATE: 11 JAN 01

MEMORANDUM FOR: WH STRIPPING DESK

DOCUMENT DESCRIPTION: TO: MOSSMAN, DIANNE

SOURCE: PRESIDENT

DATE: 11 JAN 01

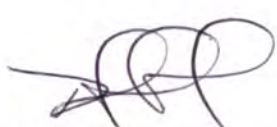
SUBJ: REPLY TO MOSSMAN

REQUIRED ACTION: FOR DISPATCH

DUE DATE: 12 JAN 00

COMMENT: DISPATCH W/ PHOTO

FOR


JOHN W. FICKLIN

NSC RECORDS MANAGEMENT OFFICE

010112



439029

THE WHITE HOUSE

WASHINGTON

January 11, 2001

Dear Steny:

Thank you for your letter regarding the situation in Chechnya. Your suggestions were helpful as I prepared for my meeting with Russian President Putin in Brunei.

I remain deeply troubled by Russia's conduct in Chechnya, the widespread disregard for fundamental human rights, and the lack of accountability for atrocities. The absence of progress in these areas and on the other recommendations of the United Nations Commission on Human Rights is extremely disappointing.

I have repeatedly made clear that Russia's conduct in Chechnya has eroded its international standing and undermined its stated objective to protect its citizens from lawlessness and terrorism. President Putin has not taken meaningful steps toward a political solution to the conflict and has not upheld international humanitarian and human rights standards, including the return of the OSCE Assistance Group to Chechnya.

Again, thank you for writing. I am grateful for your efforts to promote peace and justice in this region.

Sincerely,

Bin

The Honorable Steny H. Hoyer
House of Representatives
Washington, D.C. 20515-2005

010112

THE WHITE HOUSE

WASHINGTON

January 11, 2001

Dear Representative Smith:

Thank you for your letter regarding the situation in Chechnya. Your suggestions were helpful as I prepared for my meeting with Russian President Putin in Brunei.

I remain deeply troubled by Russia's conduct in Chechnya, the widespread disregard for fundamental human rights, and the lack of accountability for atrocities. The absence of progress in these areas and on the other recommendations of the United Nations Commission on Human Rights is extremely disappointing.

I have repeatedly made clear that Russia's conduct in Chechnya has eroded its international standing and undermined its stated objective to protect its citizens from lawlessness and terrorism. President Putin has not taken meaningful steps toward a political solution to the conflict and has not upheld international humanitarian and human rights standards, including the return of the OSCE Assistance Group to Chechnya.

Again, thank you for writing. I am grateful for your efforts to promote peace and justice in this region.

Sincerely,

A handwritten signature in black ink that reads "Bill Clinton". The signature is written in a cursive, flowing style. To the right of the signature, there is a small, handwritten mark that looks like a stylized "A" or a checkmark.

The Honorable Christopher H. Smith
House of Representatives
Washington, D.C. 20515-3004

010112

NATIONAL SECURITY COUNCIL

ID 0007064

REFERRAL

DATE: 11 JAN 01

MEMORANDUM FOR: WH STRIPPING DESK

DOCUMENT DESCRIPTION: TO: SMITH, CHRISTOPHER H

SOURCE: PRESIDENT

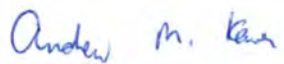
DATE: 11 JAN 01

SUBJ: REPLIES TO REPS SMITH & HOYER

REQUIRED ACTION: FOR DISPATCH

DUE DATE: 12 JAN 01

COMMENT:

Andrew M. Kan

 FOR

JOHN W. FICKLIN

NSC RECORDS MANAGEMENT OFFICE

010112

New package -
there are still
some typos

December 18, 2000



434244

MEMORANDUM TO THE PRESIDENT**FROM**JOHN D. PODESTA *JDP***SUBJECT**

MEETING WITH PRESIDENT-ELECT BUSH

Tomorrow you will be meeting with President-elect George W. Bush to discuss the transition. Bush will arrive at the Diplomatic Room where you will greet him and then walk through the colonnade to the Oval Office. There will be a photo opportunity during your walk through the colonnade. The meeting in the Oval Office will be held for approximately 20 minutes and will begin with a pool spray. Andy Card and I will join you and President-elect Bush for the Oval Office meeting. Following the meeting, you and President-elect Bush will have lunch in the Residence.

Below are recommendations from Sandy, Bruce, Gene and Jack on several issues you may want to address during your meetings.

National Security Council

Middle East -- Political dynamic of both parties is driving them back into negotiations (not our timetable). Barak's election. Arafat fear of results of Israeli election and, perhaps, apprehension that he is losing control. Have told them we will help as needed. Probably week or so of negotiations, here and in region. Then, decision on whether bringing together leaders is advisable. Quite a high threshold for summit. Think it would be useful to you (Bush) if conflict is defused before you begin. Wider escalation involving Syria and others could be consuming. If agreement possible, I will need to talk with you about financial and any other commitments parties seek from U.S. to reduce risks (e.g. money).

**/* North Korea -- Believe Kim il Jong has decided to engage with outside, on best terms possible. Proposed to Madeleine that he would stop development of ("freeze") missile development and end export of missiles (now to Syria, Pakistan, Gulf, etc.) if we assisted them with three satellite launches a year and maintained high level of food aide. My folks briefed Colin and Condie on details. Could have significant impact on missile proliferation in the mid-east and South Asia and give you more time to work out what you want to do on NMD. I will decide soon and Sandy and Condie will continue to discuss.

Balkans - You have said you will review U.S. force posture in Balkans and you should. But would urge you to consult closely with Euros before unilateral action. Euros now 85% of forces in Bosnia and Kosovo. U.S. less than 10,000 total. Have achieved democratic and largely peaceful Southeast Europe. Accelerating U.S. drawdown likely to cost you more with Euros than you gain.

*Copied
Podesta*

Curran

PHOTOCOPY
WJC HANDWRITING

Latin America - There is a great opportunity to make a giant leap forward here in the next year. Fox appears to be willing to exercise Mexican leadership in the Hemisphere in a less ideological manner than traditionally. The Summit of the Americas in April (Ottawa) provides an opportunity to give new momentum to the FTAA (perhaps enhanced by U.S. "fast track" authority).

China - The next two years will determine how China fares as it further opens its economy and whether the transition from Jiang will be a step forward or backwards. In the meantime, we need to encourage dialogue between China and Taiwan and handle Taiwan's ambitious requests for new arms sales in a careful way.

Domestic Policy Council

Education - We have made enormous bipartisan progress over the past several years to boost investment in education, improve student achievement, reduce the opportunity gap and instill accountability in our schools. I know these are goals you share and am anxious to provide any assistance you may need to continue to our fight for tougher accountability and education reform. We have found that the key to bipartisan support involves devoting significant resources to education at the same time we have called for increased accountability. Block granting popular, successful programs like class size and after-school would be highly problematic from both a policy and political perspective.

National Service - During the course of my Administration, I have worked across party lines to build support for a national service effort that includes everything from the Points of Light Foundation started by your father to America's Promise spearheaded by General Powell to AmeriCorps initiated by my Administration. In the past eight years, we have been able to double the investment in the Points of Light Foundation to \$10 million and this year I requested and worked with Congress to secure \$7.5 million for General Powell's America's Promise. To date, I am pleased to be able to tell you that over 200,000 AmeriCorps members have served in communities throughout the country helping to tutor children learning to read, building homes for low-income families, helping communities rebuild after natural disaster and so much more. The spirit of bipartisan support for this program was evident this year when Governor Racicot led an effort among all of the Governors to urge Congress to reauthorize AmeriCorps and the other national and community service initiatives. I was very glad to see you support this effort. As you know, we were not able to complete this reauthorization this year, but I hope that you will lead the effort to get it done in the next Congress so that the young and old alike can continue to serve their communities with the support of the Federal government.

Health Care - There is great potential for a number of important and bipartisan health policy achievements that you may want to encourage early in your Administration. With the exception of the Medicare prescription drug issue, there is already broad bipartisan support in both Houses for compromise versions of the Patients' Bill of Rights, incremental health coverage expansions (especially bipartisan support on S-chip patient coverage), and tax approaches to long-term care.

Patients' Bill of Rights - Senator McCain and Senator Edwards are working out an agreement on the enforcement/remedy issue that could help facilitate a quick resolution for the long-debated Patients' Bill of Rights. Since the House has already passed a much more progressive version of this bill (Norwood-Dingell), your primary challenge here will be to convince Senator Nickles about the importance of compromising and achieving finality on this issue.

Office of Management and Budget

NOTE: Members of President-elect Bush's team have indicated recently the need to provide a large tax cut roughly equal to the size of the surplus. It is not clear whether they have focused on the need for revenues to exceed spending in order for the debt to be paid down. You may want to raise this point.

Budget Projections - Congress did not complete its work on the FY 2001 budget until last Friday. This, of course, has delayed our finalization of the budget projections, and will likely put pressure on your preparation of the FY 2002 budget. We expect to have the baseline numbers available for your transition team some time early next week.

Surplus - The surplus is very volatile, as the numbers can move around dramatically. I have never been sorry about using conservative projections to later be surprised with good news.

Defense Funding - There are some inevitabilities to keep in mind. For example, in the area of defense funding, which comprises over one-half of the discretionary budget, you will find tension between procurement investments versus day-to-day readiness and quality of life spending. Both tend to grow in future years and any planning must balance the growth in each. Decisions to fund one without considering the other will preclude the other.

National Economic Council

All of your economic advisors believe there is probably little to be gained from doing an overview of the economy because anything you say will have political overtones. If you try to describe the economy as strong, it may be seen as either taking away the justification for a tax cut, or making clear any future problems, in 2001 on his watch. On the other hand, any acknowledgement by you of weakness in the economy will immediately or eventually be leaked out by them to justify tax cut or show even we recognize the economy was somehow weakened. To the degree that you talk about the economy; STAY POSITIVE. You can mention that blue chip from December 10th:

Growth 2001:	3.1%
CPI 2001:	2.7%
UE 2001:	4.3%

49 of 50 Blue Chip forecasters believe growth will be 2.5 or above in 2001. And only 18% believe there will be 2 quarters of growth below 2.0 percent during the next year.

In terms of general points to make in the room that would be fine or positive in the room if they were made public, I would recommend the following:

Fiscal Discipline - You have found better to err on the side of fiscal discipline and conservatism on budget forecasts not only lower interest rates, but ability to manage in Asian financial crisis were important results of fiscal discipline.

Federal Reserve Independence - While political advisors will want to make headlines commenting on the Federal Reserve, you found the long term benefits of fully respecting federal reserve independence pays off in market confidence and the ability to work together when crises emerge.

Globalization and Global Poverty - The opportunity in building consensus for open global markets and globalization is to take advantage of religious and bi-partisan consensus for debt relief, AIDS, and education funding for the world's poorest countries. Tell him you'd like to work with him to keep building this new consensus.

Economic Team Process - Explain how during economic policy in a team approach has been critical in making good decisions, sharpening analysis, building in divergent views, and building cohesion in the Administration. Stress that you have made NEC director Cabinet level on the same rank as NSC director. Bush could be the first to seek legislation to codify the NSC.

Social Security and Medicare - Anything you say that implies any openness to individual accounts will absolutely be leaked and used to divide Democrats. Two messages you should consider:

- A) *Importance of Raising Profile:* You knew that full social security reform was going to be difficult, but you feel effort raised profile and encouraged people to save the surplus for the future.
- B) *Take close look at our Medicare Plan:* Now that the election is over, take a closer look at our Medicare reform. It's more reform oriented than you might think. Competition while protecting Medicare Premiums from rising for those staying in traditional Medicare programs.

Race-One America

You have dedicated your second term to bringing our country together. You have talked to the American people about the importance of coming together regardless of their racial and ethnic differences. You have stressed the importance of our diversity and identified it as one of our nation's strengths. In your conversation with Bush you may want to stress the importance of bridging the racial and ethnic divides that not only exist but also have been heightened as a result of this election. Many African Americans, in particular, believe that they were disenfranchised during this election and they are justifiably very angry. It is important that he not allow the racial and ethnic tensions continue to harden and go unattended.

December 18, 2000

'00 DEC 18 PM 8:35

MEMORANDUM TO THE PRESIDENT

FROM JOHN D. PODESTA

SUBJECT MEETING WITH PRESIDENT-ELECT BUSH

Tomorrow you will be meeting with President-elect George W. Bush to discuss the transition. Bush will arrive at the Diplomatic Room where you will greet him and then walk through the colonnade to the Oval Office. There will be a photo opportunity during your walk through the colonnade. The meeting in the Oval Office will be held for approximately 20 minutes and will begin with a pool spray. Andy Card and I will join you and President-elect Bush for the Oval Office meeting. Following the meeting, you and President-elect Bush will have lunch in the Residence.

Below are recommendations from Sandy, Bruce, Gene and Jack on several issues you may want to address during your meetings.

National Security Council

Middle East – Political dynamic of both parties is driving them back into negotiations (not our timetable). Barak's election. Arafat fear of results of Israeli election and, perhaps, apprehension that he is losing control. Have told them we will help as needed. Probably week or so of negotiations, here and in region. Then, decision on whether bringing together leaders is advisable. Quite a high threshold for summit. Think it would be useful to you (Bush) if conflict is defused before you begin. Wider escalation involving Syria and others could be consuming. If agreement possible, I will need to talk with you about financial and any other commitments parties seek from U.S. to reduce risks (e.g. money).

North Korea – Believe Kim il Jong has decided to engage with outside, on best terms possible. Proposed to Madeleine that he would stop development of ("freeze") missile development and end export of missiles (now to Syria, Pakistan, Gulf, etc.) if we assisted them with three satellite launches a year and maintained high level of food aide. My folks briefed Colin and Condie on details. Could have significant impact on missile proliferation in the mid-east and South Asia and give you more time to work out what you want to do on NMD. I will decide soon and Sandy and Condie will continue to discuss.

Balkans - You have said you will review U.S. force posture in Balkans and you should. But would urge you to consult closely with Euros before unilateral action. Euros now 85% of forces in Bosnia and Kosovo. U.S. less than 10,000 total. Have achieved democratic and largely peaceful Southeast Europe. Accelerating U.S. drawdown likely to cost you more with Euros than you gain.

434244

Latin America - There is a great opportunity to make a giant leap forward here in the next year. Fox appears to be willing to exercise Mexican leadership in the Hemisphere in a less ideological manner than traditionally. The Summit of the Americas in April (Ottawa) provides an opportunity to give new momentum to the FTAA (perhaps enhanced by U.S. "fast track" authority).

China - The next two years will determine how China fares as it further opens its economy and whether the transition from Jiang will be a step forward or backwards. In the meantime, we need to encourage dialogue between China and Taiwan and handle Taiwan's ambitious requests for new arms sales in a careful way.

Domestic Policy Council

Education - We have made enormous bipartisan progress over the past several years to boost investment in education, improve student achievement, reduce the opportunity gap and instill accountability in our schools. I know these are goals you share and am anxious to provide any assistance you may need to continue to our fight for tougher accountability and education reform. We have found that the key to bipartisan support involves devoting significant resources to education at the same time we have called for increased accountability. Block granting popular, successful programs like class size and after-school would be highly problematic from both a policy and political perspective.

National Service - During the course of my Administration, I have worked across party lines to build support for a national service effort that includes everything from the Points of Light Foundation started by your father to America's Promise spearheaded by General Powell to AmeriCorps initiated by my Administration. In the past eight years, we have been able to double the investment in the Points of Light Foundation to \$10 million and this year I requested and worked with Congress to secure \$7.5 million for General Powell's America's Promise. To date, I am pleased to be able to tell you that over 200,000 AmeriCorps members have served in communities throughout the country helping to tutor children learning to read, building homes for low-income families, helping communities rebuild after natural disaster and so much more. The spirit of bipartisan support for this program was evident this year when Governor Racicot led an effort among all of the Governors to urge Congress to reauthorize AmeriCorps and the other national and community service initiatives. I was very glad to see you support this effort. As you know, we were not able to complete this reauthorization this year, but I hope that you will lead the effort to get it done in the next Congress so that the young and old alike can continue to serve their communities with the support of the Federal government.

Health Care - There is great potential for a number of important and bipartisan health policy achievements that you may want to encourage early in your Administration. With the exception of the Medicare prescription drug issue, there is already broad bipartisan support in both Houses for compromise versions of the Patients' Bill of Rights, incremental health coverage expansions (especially bipartisan support on S-chip patient coverage), and tax approaches to long-term care.

Patients' Bill of Rights - Senator McCain and Senator Edwards are working out an agreement on the enforcement/remedy issue that could help facilitate a quick resolution for the long-debated Patients' Bill of Rights. Since the House has already passed a much more progressive version of this bill (Norwood-Dingell), your primary challenge here will be to convince Senator Nickles about the importance of compromising and achieving finality on this issue.

Office of Management and Budget

NOTE: Members of President-elect Bush's team have indicated recently the need to provide a large tax cut roughly equal to the size of the surplus. It is not clear whether they have focused on the need for revenues to exceed spending in order for the debt to be paid down. You may want to raise this point.

Budget Projections - Congress did not complete its work on the FY 2001 budget until last Friday. This, of course, has delayed our finalization of the budget projections, and will likely put pressure on your preparation of the FY 2002 budget. We expect to have the baseline numbers available for your transition team some time early next week.

Surplus - The surplus is very volatile, as the numbers can move around dramatically. I have never been sorry about using conservative projections to later be surprised with good news.

Defense Funding - There are some inevitabilities to keep in mind. For example, in the area of defense funding, which comprises over one-half of the discretionary budget, you will find tension between procurement investments versus day-to-day readiness and quality of life spending. Both tend to grow in future years and any planning must balance the growth in each. Decisions to fund one without considering the other will preclude the other.

National Economic Council

All of your economic advisors believe there is probably little to be gained from doing an overview of the economy because anything you say will have political overtones. If you try to describe the economy as strong, it may be seen as either taking away the justification for a tax cut, or making clear any future problems, in 2001 on his watch. On the other hand, any acknowledgement by you of weakness in the economy will immediately or eventually be leaked out by them to justify tax cut or show even we recognize the economy was somehow weakened. To the degree that you talk about the economy; STAY POSITIVE. You can mention that blue chip from December 10th:

Growth 2001:	3.1%
CPI 2001:	2.7%
UE 2001:	4.3%

49 of 50 Blue Chip forecasters believe growth will be 2.5 or above in 2001. And only 18% believe there will be 2 quarters of growth below 2.0 percent during the next year.

In terms of general points to make in the room that would be fine or positive in the room if they were made public, I would recommend the following:

Fiscal Discipline - You have found better to err on the side of fiscal discipline and conservatism on budget forecasts not only lower interest rates, but ability to manage in Asian financial crisis were important results of fiscal discipline.

Federal Reserve Independence - While political advisors will want to make headlines commenting on the Federal Reserve, you found the long term benefits of fully respecting federal reserve independence pays off in market confidence and the ability to work together when crises emerge.

Globalization and Global Poverty - The opportunity in building consensus for open global markets and globalization is to take advantage of religious and bi-partisan consensus for debt relief, AIDS, and education funding for the world's poorest countries. Tell him you'd like to work with him to keep building this new consensus.

Economic Team Process - Explain how during economic policy in a team approach has been critical in making good decisions, sharpening analysis, building in divergent views, and building cohesion in the Administration. Stress that you have made NEC director Cabinet level on the same rank as NSC director. Bush could be the first to seek legislation to codify the NSC.

Social Security and Medicare - Anything you say that implies any openness to individual accounts will absolutely be leaked and used to divide Democrats. Two messages you should consider:

- A) *Importance of Raising Profile*: You knew that full social security reform was going to be difficult, but you feel effort raised profile and encouraged people to save the surplus for the future.
- B) *Take close look at our Medicare Plan*: Now that the election is over, take a closer look at our Medicare reform. It's more reform oriented than you might think. Competition while protecting Medicare Premiums from rising for those staying in traditional Medicare programs.

Race-One America

You have dedicated your second term to bringing our country together. You have talked to the American people about the importance of coming together regardless of their racial and ethnic differences. You have stressed the importance of our diversity and identified it as one of our nation's strengths. In your conversation with Bush you may want to stress the importance of bridging the racial and ethnic divides that not only exist but also have been heightened as a result of this election. Many African Americans, in particular, believe that they were disenfranchised during this election and they are justifiably very angry. It is important that he not allow the racial and ethnic tensions continue to harden and go unattended.

December 18, 2000

00 DEC 18 PM 8:35

MEMORANDUM TO THE PRESIDENT

FROM JOHN D. PODESTA

SUBJECT MEETING WITH PRESIDENT-ELECT BUSH

Tomorrow you will be meeting with President-elect George W. Bush to discuss the transition. Bush will arrive at the Diplomatic Room where you will greet him and then walk through the colonnade to the Oval Office. There will be a photo opportunity during your walk through the colonnade. The meeting in the Oval Office will be held for approximately 20 minutes and will begin with a pool spray. Andy Card and I will join you and President-elect Bush for the Oval Office meeting. Following the meeting, you and President-elect Bush will have lunch in the Residence.

Below are recommendations from Sandy, Bruce, Gene and Jack on several issues you may want to address during your meetings.

National Security Council

Middle East – Political dynamic of both parties is driving them back into negotiations (not our timetable). Barak's election. Arafat fear of results of Israeli election and, perhaps, apprehension that he is losing control. Have told them we will help as needed. Probably week or so of negotiations, here and in region. Then, decision on whether bringing together leaders is advisable. Quite a high threshold for summit. Think it would be useful to you (Bush) if conflict is defused before you begin. Wider escalation involving Syria and others could be consuming. If agreement possible, I will need to talk with you about financial and any other commitments parties seek from U.S. to reduce risks (e.g. money).

North Korea – Believe Kim il Jong has decided to engage with outside, on best terms possible. Proposed to Madeleine that he would stop development of ("freeze") missile development and end export of missiles (now to Syria, Pakistan, Gulf, etc.) if we assisted them with three satellite launches a year and maintained high level of food aide. My folks briefed Colin and Condie on details. Could have significant impact on missile proliferation in the mid-east and South Asia and give you more time to work out what you want to do on NMD. I will decide soon and Sandy and Condie will continue to discuss.

Balkans - You have said you will review U.S. force posture in Balkans and you should. But would urge you to consult closely with Euros before unilateral action. Euros now 85% of forces in Bosnia and Kosovo. U.S. less than 10,000 total. Have achieved democratic and largely peaceful Southeast Europe. Accelerating U.S. drawdown likely to cost you more with Euros than you gain.

Latin America - There is a great opportunity to make a giant leap forward here in the next year. Fox appears to be willing to exercise Mexican leadership in the Hemisphere in a less ideological manner than traditionally. The Summit of the Americas in April (Ottawa) provides an opportunity to give new momentum to the FTAA (perhaps enhanced by U.S. "fast track" authority).

China - The next two years will determine how China fares as it further opens its economy and whether the transition from Jiang will be a step forward or backwards. In the meantime, we need to encourage dialogue between China and Taiwan and handle Taiwan's ambitious requests for new arms sales in a careful way.

Domestic Policy Council

Education - We have made enormous bipartisan progress over the past several years to boost investment in education, improve student achievement, reduce the opportunity gap and instill accountability in our schools. I know these are goals you share and am anxious to provide any assistance you may need to continue to our fight for tougher accountability and education reform. We have found that the key to bipartisan support involves devoting significant resources to education at the same time we have called for increased accountability. Block granting popular, successful programs like class size and after-school would be highly problematic from both a policy and political perspective.

National Service - During the course of my Administration, I have worked across party lines to build support for a national service effort that includes everything from the Points of Light Foundation started by your father to America's Promise spearheaded by General Powell to AmeriCorps initiated by my Administration. In the past eight years, we have been able to double the investment in the Points of Light Foundation to \$10 million and this year I requested and worked with Congress to secure \$7.5 million for General Powell's America's Promise. To date, I am pleased to be able to tell you that over 200,000 AmeriCorps members have served in communities throughout the country helping to tutor children learning to read, building homes for low-income families, helping communities rebuild after natural disaster and so much more. The spirit of bipartisan support for this program was evident this year when Governor Racicot led an effort among all of the Governors to urge Congress to reauthorize AmeriCorps and the other national and community service initiatives. I was very glad to see you support this effort. As you know, we were not able to complete this reauthorization this year, but I hope that you will lead the effort to get it done in the next Congress so that the young and old alike can continue to serve their communities with the support of the Federal government.

Health Care - There is great potential for a number of important and bipartisan health policy achievements that you may want to encourage early in your Administration. With the exception of the Medicare prescription drug issue, there is already broad bipartisan support in both Houses for compromise versions of the Patients' Bill of Rights, incremental health coverage expansions (especially bipartisan support on S-chip patient coverage), and tax approaches to long-term care.

Patients' Bill of Rights - Senator McCain and Senator Edwards are working out an agreement on the enforcement/remedy issue that could help facilitate a quick resolution for the long-debated Patients' Bill of Rights. Since the House has already passed a much more progressive version of this bill (Norwood-Dingell), your primary challenge here will be to convince Senator Nickles about the importance of compromising and achieving finality on this issue.

Office of Management and Budget

NOTE: Members of President-elect Bush's team have indicated recently the need to provide a large tax cut roughly equal to the size of the surplus. It is not clear whether they have focused on the need for revenues to exceed spending in order for the debt to be paid down. You may want to raise this point.

Budget Projections - Congress did not complete its work on the FY 2001 budget until last Friday. This, of course, has delayed our finalization of the budget projections, and will likely put pressure on your preparation of the FY 2002 budget. We expect to have the baseline numbers available for your transition team some time early next week.

Surplus - The surplus is very volatile, as the numbers can move around dramatically. I have never been sorry about using conservative projections to later be surprised with good news.

Defense Funding - There are some inevitabilities to keep in mind. For example, in the area of defense funding, which comprises over one-half of the discretionary budget, you will find tension between procurement investments versus day-to-day readiness and quality of life spending. Both tend to grow in future years and any planning must balance the growth in each. Decisions to fund one without considering the other will preclude the other.

National Economic Council

All of your economic advisors believe there is probably little to be gained from doing an overview of the economy because anything you say will have political overtones. If you try to describe the economy as strong, it may be seen as either taking away the justification for a tax cut, or making clear any future problems, in 2001 on his watch. On the other hand, any acknowledgement by you of weakness in the economy will immediately or eventually be leaked out by them to justify tax cut or show even we recognize the economy was somehow weakened. To the degree that you talk about the economy; STAY POSITIVE. You can mention that blue chip from December 10th:

Growth 2001:	3.1%
CPI 2001:	2.7%
UE 2001:	4.3%

49 of 50 Blue Chip forecasters believe growth will be 2.5 or above in 2001. And only 18% believe there will be 2 quarters of growth below 2.0 percent during the next year.

In terms of general points to make in the room that would be fine or positive in the room if they were made public, I would recommend the following:

Fiscal Discipline - You have found better to err on the side of fiscal discipline and conservatism on budget forecasts not only lower interest rates, but ability to manage in Asian financial crisis were important results of fiscal discipline.

Federal Reserve Independence - While political advisors will want to make headlines commenting on the Federal Reserve, you found the long term benefits of fully respecting federal reserve independence pays off in market confidence and the ability to work together when crises emerge.

Globalization and Global Poverty - The opportunity in building consensus for open global markets and globalization is to take advantage of religious and bi-partisan consensus for debt relief, AIDS, and education funding for the world's poorest countries. Tell him you'd like to work with him to keep building this new consensus.

Economic Team Process - Explain how during economic policy in a team approach has been critical in making good decisions, sharpening analysis, building in divergent views, and building cohesion in the Administration. Stress that you have made NEC director Cabinet level on the same rank as NSC director. Bush could be the first to seek legislation to codify the NSC.

Social Security and Medicare - Anything you say that implies any openness to individual accounts will absolutely be leaked and used to divide Democrats. Two messages you should consider:

- A) *Importance of Raising Profile:* You knew that full social security reform was going to be difficult, but you feel effort raised profile and encouraged people to save the surplus for the future.
- B) *Take close look at our Medicare Plan:* Now that the election is over, take a closer look at our Medicare reform. It's more reform oriented than you might think. Competition while protecting Medicare Premiums from rising for those staying in traditional Medicare programs.

Race-One America

You have dedicated your second term to bringing our country together. You have talked to the American people about the importance of coming together regardless of their racial and ethnic differences. You have stressed the importance of our diversity and identified it as one of our nation's strengths. In your conversation with Bush you may want to stress the importance of bridging the racial and ethnic divides that not only exist but also have been heightened as a result of this election. Many African Americans, in particular, believe that they were disenfranchised during this election and they are justifiably very angry. It is important that he not allow the racial and ethnic tensions continue to harden and go unattended.

December 18, 2000

00 DEC 18 PM 8:35

MEMORANDUM TO THE PRESIDENT**FROM**

JOHN D. PODESTA

SUBJECT

MEETING WITH PRESIDENT-ELECT BUSH

Tomorrow you will be meeting with President-elect George W. Bush to discuss the transition. Bush will arrive at the Diplomatic Room where you will greet him and then walk through the colonnade to the Oval Office. There will be a photo opportunity during your walk through the colonnade. The meeting in the Oval Office will be held for approximately 20 minutes and will begin with a pool spray. Andy Card and I will join you and President-elect Bush for the Oval Office meeting. Following the meeting, you and President-elect Bush will have lunch in the Residence.

Below are recommendations from Sandy, Bruce, Gene and Jack on several issues you may want to address during your meetings.

National Security Council

Middle East – Political dynamic of both parties is driving them back into negotiations (not our timetable). Barak's election. Arafat fear of results of Israeli election and, perhaps, apprehension that he is losing control. Have told them we will help as needed. Probably week or so of negotiations, here and in region. Then, decision on whether bringing together leaders is advisable. Quite a high threshold for summit. Think it would be useful to you (Bush) if conflict is defused before you begin. Wider escalation involving Syria and others could be consuming. If agreement possible, I will need to talk with you about financial and any other commitments parties seek from U.S. to reduce risks (e.g. money).

North Korea – Believe Kim il Jong has decided to engage with outside, on best terms possible. Proposed to Madeleine that he would stop development of ("freeze") missile development and end export of missiles (now to Syria, Pakistan, Gulf, etc.) if we assisted them with three satellite launches a year and maintained high level of food aide. My folks briefed Colin and Condie on details. Could have significant impact on missile proliferation in the mid-east and South Asia and give you more time to work out what you want to do on NMD. I will decide soon and Sandy and Condie will continue to discuss.

Balkans - You have said you will review U.S. force posture in Balkans and you should. But would urge you to consult closely with Euros before unilateral action. Euros now 85% of forces in Bosnia and Kosovo. U.S. less than 10,000 total. Have achieved democratic and largely peaceful Southeast Europe. Accelerating U.S. drawdown likely to cost you more with Euros than you gain.

Latin America - There is a great opportunity to make a giant leap forward here in the next year. Fox appears to be willing to exercise Mexican leadership in the Hemisphere in a less ideological manner than traditionally. The Summit of the Americas in April (Ottawa) provides an opportunity to give new momentum to the FTAA (perhaps enhanced by U.S. "fast track" authority).

China - The next two years will determine how China fares as it further opens its economy and whether the transition from Jiang will be a step forward or backwards. In the meantime, we need to encourage dialogue between China and Taiwan and handle Taiwan's ambitious requests for new arms sales in a careful way.

Domestic Policy Council

Education - We have made enormous bipartisan progress over the past several years to boost investment in education, improve student achievement, reduce the opportunity gap and instill accountability in our schools. I know these are goals you share and am anxious to provide any assistance you may need to continue to our fight for tougher accountability and education reform. We have found that the key to bipartisan support involves devoting significant resources to education at the same time we have called for increased accountability. Block granting popular, successful programs like class size and after-school would be highly problematic from both a policy and political perspective.

National Service - During the course of my Administration, I have worked across party lines to build support for a national service effort that includes everything from the Points of Light Foundation started by your father to America's Promise spearheaded by General Powell to AmeriCorps initiated by my Administration. In the past eight years, we have been able to double the investment in the Points of Light Foundation to \$10 million and this year I requested and worked with Congress to secure \$7.5 million for General Powell's America's Promise. To date, I am pleased to be able to tell you that over 200,000 AmeriCorps members have served in communities throughout the country helping to tutor children learning to read, building homes for low-income families, helping communities rebuild after natural disaster and so much more. The spirit of bipartisan support for this program was evident this year when Governor Racicot led an effort among all of the Governors to urge Congress to reauthorize AmeriCorps and the other national and community service initiatives. I was very glad to see you support this effort. As you know, we were not able to complete this reauthorization this year, but I hope that you will lead the effort to get it done in the next Congress so that the young and old alike can continue to serve their communities with the support of the Federal government.

Health Care - There is great potential for a number of important and bipartisan health policy achievements that you may want to encourage early in your Administration. With the exception of the Medicare prescription drug issue, there is already broad bipartisan support in both Houses for compromise versions of the Patients' Bill of Rights, incremental health coverage expansions (especially bipartisan support on S-chip patient coverage), and tax approaches to long-term care.

Patients' Bill of Rights - Senator McCain and Senator Edwards are working out an agreement on the enforcement/remedy issue that could help facilitate a quick resolution for the long-debated Patients' Bill of Rights. Since the House has already passed a much more progressive version of this bill (Norwood-Dingell), your primary challenge here will be to convince Senator Nickles about the importance of compromising and achieving finality on this issue.

Office of Management and Budget

NOTE: Members of President-elect Bush's team have indicated recently the need to provide a large tax cut roughly equal to the size of the surplus. It is not clear whether they have focused on the need for revenues to exceed spending in order for the debt to be paid down. You may want to raise this point.

Budget Projections - Congress did not complete its work on the FY 2001 budget until last Friday. This, of course, has delayed our finalization of the budget projections, and will likely put pressure on your preparation of the FY 2002 budget. We expect to have the baseline numbers available for your transition team some time early next week.

Surplus - The surplus is very volatile, as the numbers can move around dramatically. I have never been sorry about using conservative projections to later be surprised with good news.

Defense Funding - There are some inevitabilities to keep in mind. For example, in the area of defense funding, which comprises over one-half of the discretionary budget, you will find tension between procurement investments versus day-to-day readiness and quality of life spending. Both tend to grow in future years and any planning must balance the growth in each. Decisions to fund one without considering the other will preclude the other.

National Economic Council

All of your economic advisors believe there is probably little to be gained from doing an overview of the economy because anything you say will have political overtones. If you try to describe the economy as strong, it may be seen as either taking away the justification for a tax cut, or making clear any future problems, in 2001 on his watch. On the other hand, any acknowledgement by you of weakness in the economy will immediately or eventually be leaked out by them to justify tax cut or show even we recognize the economy was somehow weakened. To the degree that you talk about the economy; STAY POSITIVE. You can mention that blue chip from December 10th:

Growth 2001:	3.1%
CPI 2001:	2.7%
UE 2001:	4.3%

49 of 50 Blue Chip forecasters believe growth will be 2.5 or above in 2001. And only 18% believe there will be 2 quarters of growth below 2.0 percent during the next year.

In terms of general points to make in the room that would be fine or positive in the room if they were made public, I would recommend the following:

Fiscal Discipline - You have found better to err on the side of fiscal discipline and conservatism on budget forecasts not only lower interest rates, but ability to manage in Asian financial crisis were important results of fiscal discipline.

Federal Reserve Independence - While political advisors will want to make headlines commenting on the Federal Reserve, you found the long term benefits of fully respecting federal reserve independence pays off in market confidence and the ability to work together when crises emerge.

Globalization and Global Poverty - The opportunity in building consensus for open global markets and globalization is to take advantage of religious and bi-partisan consensus for debt relief, AIDS, and education funding for the world's poorest countries. Tell him you'd like to work with him to keep building this new consensus.

Economic Team Process - Explain how during economic policy in a team approach has been critical in making good decisions, sharpening analysis, building in divergent views, and building cohesion in the Administration. Stress that you have made NEC director Cabinet level on the same rank as NSC director. Bush could be the first to seek legislation to codify the NSC.

Social Security and Medicare - Anything you say that implies any openness to individual accounts will absolutely be leaked and used to divide Democrats. Two messages you should consider:

- A) *Importance of Raising Profile*: You knew that full social security reform was going to be difficult, but you feel effort raised profile and encouraged people to save the surplus for the future.
- B) *Take close look at our Medicare Plan*: Now that the election is over, take a closer look at our Medicare reform. It's more reform oriented than you might think. Competition while protecting Medicare Premiums from rising for those staying in traditional Medicare programs.

Race-One America

You have dedicated your second term to bringing our country together. You have talked to the American people about the importance of coming together regardless of their racial and ethnic differences. You have stressed the importance of our diversity and identified it as one of our nation's strengths. In your conversation with Bush you may want to stress the importance of bridging the racial and ethnic divides that not only exist but also have been heightened as a result of this election. Many African Americans, in particular, believe that they were disenfranchised during this election and they are justifiably very angry. It is important that he not allow the racial and ethnic tensions continue to harden and go unattended.

SEND
ORIGINAL TO
OMB

KEEP COPY
HERE FOR
FILE

@ 1-8-01 done



THE SECRETARY OF THE INTERIOR
WASHINGTON



434464

Memorandum to the President

Date: December 21, 2000

From: Secretary Babbitt

Discussion of the Virgin Islands Coral Reef National Monument Proposal

Attached is a draft proclamation, with an accompanying map,¹ to establish the Virgin Islands Coral Reef National Monument in the U.S. Virgin Islands. This memorandum describes: (a) the basis for my recommendation that you establish the Virgin Islands Coral Reef National Monument; (b) the draft proclamation; and (c) the resources, ownership patterns, and management issues present in the area. After careful review of the record, I am convinced that the scientific and historic objects satisfy the criteria for establishment of a national monument pursuant to the Antiquities Act, and that the boundaries of the land reserved represent the smallest area compatible with the proper care and management of those objects.

THE ANTIQUITIES ACT

Section 2 of the Antiquities Act, 16 U.S.C. 431, authorizes the President to establish as national monuments "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States...."

The proposed monument includes submerged lands off of St. John, within the 3-mile belt of the Virgin Island Territory. These lands are not "owned" as that concept is generally understood, but rather the United States exercises paramount rights over the submerged lands, which makes them "controlled" by the United States as that term is used in the Antiquities Act. The September 15, 2000 legal opinion of the Assistant Attorney General, Office of Legal Counsel, "Administration of Coral Reef Resources in the Northwest Hawaiian Islands," concludes that the United States

¹ The boundaries of the proposed monument are drawn on the map entitled "Virgin Islands Coral Reef National Monument," which would be attached to, and made a part of, your proclamation. It is not practicable, as of this date, to describe the boundaries of the land reserved as a part of the proposed monument either by metes and bounds or by reference to designated subdivisions on official surveys shown on publicly recorded plats or maps. The Minerals Management Service's Mapping Division in cooperation with the National Park Service will produce a description as soon as practicable should you decide to proceed.

exercises sufficient control over submerged land within the territorial waters of the United States to invoke the Antiquities Act.

Within this 3-mile belt the Territorial Submerged Lands Act of 1974 (TSLA), 48 U.S.C. § 1705, transferred certain federal interests to the Virgin Island Government, but specifically retained in the United States all its interests in "all submerged lands adjacent to property owned by the United States above the line of mean high tide." This retained area has now been delineated by a Departmental survey completed this year (see 65 Fed. Reg. 68157 (2000)). Only those federally retained submerged lands – excluded from transfer to the Virgin Island Territory under the terms of the TSLA – are included in the proposed monument.

A. Objects of Historic or Scientific Interest

The proposed Virgin Islands Coral Reef National Monument is located around St. John in the U.S. Virgin Islands. It is adjacent to submerged lands that are part of the Virgin Islands National Park, established by act of Congress in 1956 and expanded in 1962, 16 U.S.C. § 398-398f. Elevations within the proposed monument delve to 20 fathoms (120 feet) below sea level. The map appended to the draft proclamation sets out the boundaries of the land that would be reserved in the monument. The outer boundaries of the area encompass approximately 13,893 marine acres, approximately 12,708 marine acres of which are owned by the federal government. The draft proclamation attached to this memo describes objects in the area that warrant protection as a monument. Attachment A is a bibliography of the principal sources of information relied upon in making this recommendation.

The proposed Virgin Islands Coral Reef National Monument, in the submerged lands off the island of St. John in the U.S. Virgin Islands, contains all the elements of a Caribbean tropical marine ecosystem. This designation furthers the protection of the scientific objects included in the Virgin Islands National Park. The biological communities of the proposed monument live in a fragile, interdependent relationship and include habitats essential for sustaining and enhancing the tropical marine ecosystem: mangroves, sea grass beds, coral reefs, octocoral hardbottom, sand communities, shallow mud and fine sediment habitat, and algal plains. The fishery habitats, deeper coral reefs, octocoral hardbottom, and algal plains of the proposed monument are all objects of scientific interest and essential to the long term sustenance of the tropical marine ecosystem.

The proposed monument is within the Virgin Islands, which lie at the heart of the insular Caribbean biome, and is representative of the Lesser Antillean biogeographic province. The island of St. John rises from a platform that extends several miles from shore before plunging to the abyssal depths of the Anegada trough to the south and the Puerto Rican trench to the north, the deepest part of the Atlantic Ocean. This platform contains a multitude of species that exist in a delicate balance, interlinked through complex relationships that have developed over tens of thousands of years.

As part of this important ecosystem, the proposed monument contains biological objects including several threatened and endangered species, which forage, breed, nest, rest, or calve in the waters. Humpback whales, pilot whales, four species of dolphins, brown pelicans, roseate terns, least terns, and the hawksbill, leatherback, and green sea turtles all use portions of the proposed monument. Countless species of reef fishes, invertebrates and plants utilize these submerged lands during their lives, and over 25 species of sea birds feed in the waters. Between the nearshore nursery habitats and the shelf edge spawning sites in the proposed monument are habitats that play essential roles during specific developmental stages of reef-associated species, including spawning migrations of many reef fish species and crustaceans.

The proposed monument lands within Hurricane Hole include the most extensive and well developed mangrove habitat on St. John. The Hurricane Hole area is an important nursery area for reef associated fish and invertebrates, instrumental in maintaining water quality by filtering and trapping sediment and debris in fresh water runoff from the fast land, and essential to the overall functioning and productivity of regional fisheries. Numerous coral reef-associated species, including the spiny lobster, queen conch, and Nassau grouper, transform from planktonic larvae to bottom-dwelling juveniles in the shallow nearshore habitats of Hurricane Hole. As they mature, they move offshore and take up residence in the deeper coral patch reefs, octocoral hardbottom, and algal plains of the proposed monument lands to the south and north of St. John.

The proposed monument lands south of St. John are predominantly deep algal plains with scattered areas of raised hard bottom. The algal plains include communities of mostly red and calcareous algae with canopies as much as half a meter high. The raised hard bottom is sparsely colonized with corals, sponges, gorgonians, and other invertebrates, thus providing shelter for lobster, groupers, and snappers as well as spawning sites for some reef fish species. These algal plains and raised hard bottom areas link the shallow water reef, sea grass, and mangrove communities with the deep water shelf and shelf edge communities of fish and invertebrates.

B. Land Area Reserved for the Proper Care and Management of the Objects to be Preserved

The Antiquities Act authorizes the President, as part of his declaration of a national monument, to reserve land, "the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected...." 16 U.S.C. § 431. The area proposed for reservation has been carefully delineated, based on review of available information, to meet the goals of properly caring for and managing the objects in perpetuity.

The area includes the biological and geological objects identified in the draft proclamation and Attachment A accompanying this memorandum. The area of the proposed monument is based on the conservation needs of the objects to be protected. The biological resources are present throughout the entire proposed monument area, and the geological resources are inextricably tied to sustaining and enhancing the biological resources in this tropical marine ecosystem. These

objects depend for their scientific value on their location at various sites or submerged elevations.

Preservation of such objects requires, among other things, protection of enough land to maintain the conditions that have made their continued existence possible. The scientific value of many of the objects within the proposed monument requires preservation of areas large enough to maintain the objects and their interactions. Degradation of the tropical marine ecosystem around the monument puts the objects in peril; a smaller area would contribute to degradation instead of enhancing the ecosystem. Many of the biological objects in the area result from the extraordinary geology and blending of ecosystems, which provide habitat for a high diversity of species. The proposed monument also provides an important link for migration and dispersal of species between habitats in the Caribbean. Many species must range within and through the area to maintain viable populations and their role in the ecosystem. Thus, protection of the aggregate area is necessary for proper care of the objects. Management of a patchwork of reserved lands would be impractical, as it would make it more difficult to care for the objects, reduce options for natural resource management, and lead to inconsistent resource management standards for overlapping resources. For these reasons, the reservation of a smaller area would undermine proper care and management of the objects to be protected by this proposed monument .

LEGAL EFFECTS OF THE PROCLAMATION

There are several significant aspects of the draft proclamation. First, it would reserve only lands owned or controlled by the United States in the area, because the Antiquities Act applies only to objects of historic or scientific interest “that are situated upon the lands owned or controlled by the Government of the United States.” 16 U.S.C. § 431.

Second, the draft proclamation would be subject to valid existing rights, if any. Thus, to the extent a person or entity has valid existing rights in the federal lands or resources within the area, the draft proclamation would respect their rights. The exercise of such rights could, however, be regulated in order to protect the purposes of the proposed monument.

Third, the submerged lands in the proposed monument are generally not subject to the public lands and mining laws of the United States; nevertheless, to provide clear public notice of this fact, the draft proclamation appropriates and withdraws the federal lands and interests in lands owned or controlled by the United States within the boundaries of the proposed monument from entry, location, sale, leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws and from disposition under all laws relating to mineral and geothermal leasing. This withdrawal prevents the Secretary of the Interior from exercising discretion under the mineral leasing acts and related laws to lease or sell federal minerals within the boundaries of the proposed monument.

Fourth, the draft proclamation would prohibit boat anchoring inside the proposed national monument, except for emergency and authorized administrative uses.

Fifth, the draft proclamation would prohibit all extractive uses, such as fishing, subject to limited exceptions for permitted bait fishing at Hurricane Hole and permitted blue runner (hard nose) line fishing south of St. John, to the extent that such fishing is consistent with the protection of the objects identified in the draft proclamation.

Sixth, the draft proclamation directs the Secretary to develop a management plan, including vessel management planning, within three years that addresses any further specific actions necessary to protect the objects identified in the draft proclamation.

ADMINISTRATION OF THE MONUMENT

A. Management by the National Park Service (NPS)

The federal lands in the area described in the attached draft proclamation are currently not assigned to any bureau. I believe the area is best managed by the NPS under the stewardship of the Virgin Islands National Park. The attached draft proclamation would, consistent with the provisions of Reorganization Plan No. 3 of 1950, have the Secretary of the Interior manage the proposed monument through the NPS under its existing authorities, but subject to the overriding purpose of protecting the objects described in the draft proclamation.

B. Impact of Monument Designation on Existing or Planned Activities in the Area

1. Currently allowed uses

Recreational and commercial use restrictions and other similar use restrictions would generally not be affected except where further limitations on these uses are required by the NPS: (1) through processes required by existing law, the NPS identifies places where such uses ought to be restricted or prohibited as necessary to protect the federal lands and resources, including the objects protected by the monument designation; or (2) the NPS finds a clear threat from such a use to the federal lands and resources, including the objects protected by the proposed monument designation, and the circumstances call for swift protective action. Recreational and commercial uses would, of course, remain subject to applicable laws and regulations, and would therefore remain subject to regulation and limitation under such provisions for reasons other than expansion of the proposed monument.

Because they directly contribute to the destruction of the objects listed in the draft proclamation, recreational and commercial boat anchoring would be prohibited in the proposed monument. Consistent with the protection of the objects listed in the draft proclamation, the NPS may install boat moorings in the proposed monument to facilitate appropriate use of the area.

2. Currently allowed fishing and other extractive uses

Because of current scientific information about coral reefs and the understanding that removing fish from the coral reef ecosystem adversely impacts the sustainability of the scientific objects detailed above, the draft proclamation includes a "no take" provision for fishing and other extractive uses that prohibits such activities in the proposed monument. The draft proclamation helps accomplish objectives laid out in Executive Order 13089 on the management of coral reefs and the United States Coral Reef Task Force's "National Action Plan for Coral Reef Conservation" that proposes 5% of the territorial waters be designated "no take" by 2002 and 20% by 2010. This action will allow the Virgin Islands to meet the 2002 goal of 5% no take. The NPS believes limited fishing may occur without harming the objects identified in the draft proclamation; therefore, to the degree consistent with the protection of the objects identified in the draft proclamation, the NPS may issue permits to allow bait fishing at Hurricane Hole and blue runner (hard nose) line fishing south of St. John.

3. Activities on territorial submerged land

The area within the boundaries of the proposed monument contains approximately 1,185 acres of submerged lands controlled by the Virgin Islands Territory. The monument designation would not apply to those lands, but the draft proclamation provides that if any of these lands within the outer boundaries of the monument are acquired or controlled by the federal government in the future, they would become part of the monument. In the absence of acquisition or federal control, the laws applicable to the use of territorial lands prior to the expansion of the monument would continue to apply.

4. Mineral activities

The area has no known potential for oil and gas development, and there are no existing mineral leases. New mineral leases or mineral sales would be prohibited as the draft proclamation withdraws the area from all applicable mineral leasing, development, and related laws.

CONCLUSION

Establishing the Virgin Islands Coral Reef National Monument would be an exemplary exercise of Presidential authority under the Antiquities Act, well in keeping with past practice through which many notable objects of historic and scientific interest have been preserved, to the Nation's great and lasting benefit. I strongly recommend you sign the proclamation.



The Secretary of the Interior

DRAFT

Presidential Proclamation #####

Establishment of the Virgin Islands Coral Reef National Monument

By the President of The United States of America

A PROCLAMATION

The Virgin Islands Coral Reef National Monument, in the submerged lands off the island of St. John in the U.S. Virgin Islands, contains all the elements of a Caribbean tropical marine ecosystem. This designation furthers the protection of the scientific objects included in the Virgin Islands National Park, created in 1956 and expanded 1962. The biological communities of the monument live in a fragile, interdependent relationship and include habitats essential for sustaining and enhancing the tropical marine ecosystem: mangroves, sea grass beds, coral reefs, octocoral hardbottom, sand communities, shallow mud and fine sediment habitat, and algal plains. The fishery habitats, deeper coral reefs, octocoral hardbottom, and algal plains of the monument are all objects of scientific interest and essential to the long term sustenance of the tropical marine ecosystem.

The monument is within the Virgin Islands, which lie at the heart of the insular Caribbean biome, and is representative of the Lesser Antillean biogeographic province. The island of St. John rises from a platform that extends several miles from shore before plunging to the abyssal depths of the Anegada trough to the south and the Puerto Rican trench to the north, the deepest part of the Atlantic Ocean. This platform contains a multitude of species that exist in a delicate balance, interlinked through complex relationships that have developed over tens of thousands of years.

As part of this important ecosystem, the monument contains biological objects including several threatened and endangered species, which forage, breed, nest, rest, or calve in the waters. Humpback whales, pilot whales, four species of dolphins, brown pelicans, roseate terns, least terns, and the hawksbill, leatherback, and green sea turtles all use portions of the monument. Countless species of reef fish, invertebrates and plants utilize these submerged lands during their lives, and over 25 species of sea birds feed in the waters. Between the nearshore nursery habitats and the shelf edge spawning sites in the monument are habitats that play essential roles during specific developmental stages of reef-associated species, including spawning migrations of many reef fish species and crustaceans.

The submerged monument lands within Hurricane Hole include the most extensive and well developed mangrove habitat on St. John. The Hurricane Hole area is an important nursery area

for reef associated fish and invertebrates, instrumental in maintaining water quality by filtering and trapping sediment and debris in fresh water runoff from the fast land, and essential to the overall functioning and productivity of regional fisheries. Numerous coral reef-associated species, including the spiny lobster, queen conch, and Nassau grouper, transform from planktonic larvae to bottom-dwelling juveniles in the shallow nearshore habitats of Hurricane Hole. As they mature, they move offshore and take up residence in the deeper coral patch reefs, octocoral hardbottom, and algal plains of the submerged monument lands to the south and north of St. John.

The monument lands south of St. John are predominantly deep algal plains with scattered areas of raised hard bottom. The algal plains include communities of mostly red and calcareous algae with canopies as much as half a meter high. The raised hard bottom is sparsely colonized with corals, sponges, gorgonians, and other invertebrates, thus providing shelter for lobster, groupers, and snappers as well as spawning sites for some reef fish species. These algal plains and raised hard bottom areas link the shallow water reef, sea grass, and mangrove communities with the deep water shelf and shelf edge communities of fish and invertebrates.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431) authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

WHEREAS it appears that it would be in the public interest to reserve such lands as a national monument to be known as the Virgin Islands Coral Reef National Monument:

NOW, THEREFORE, I, William J. Clinton, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. § 225, 16 U.S.C. § 431), do proclaim that there are hereby set apart and reserved as the Virgin Islands Coral Reef National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Virgin Islands Coral Reef National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 12,708 marine acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument.

For the purpose of protecting the objects identified above, the Secretary shall prohibit all boat anchoring, except for emergency or authorized administrative purposes.

For the purposes of protecting the objects identified above, the Secretary shall prohibit all extractive uses, except that the Secretary may issue permits for bait fishing at Hurricane Hole and for blue runner (hard nose) line fishing in the area south of St. John, to the extent that such fishing is consistent with the protection of the objects identified in this proclamation.

Lands and interests in lands within the monument not owned or controlled by the United States shall be reserved as a part of the monument upon acquisition of title or control thereto by the United States.

The Secretary of the Interior shall manage the monument through the National Park Service, pursuant to applicable legal authorities, to implement the purposes of this proclamation.

The Secretary of the Interior shall prepare a management plan, including the management of vessels in the monument, within three years that addresses any further specific actions necessary to protect the objects identified in this proclamation.

The establishment of this monument is subject to valid existing rights.

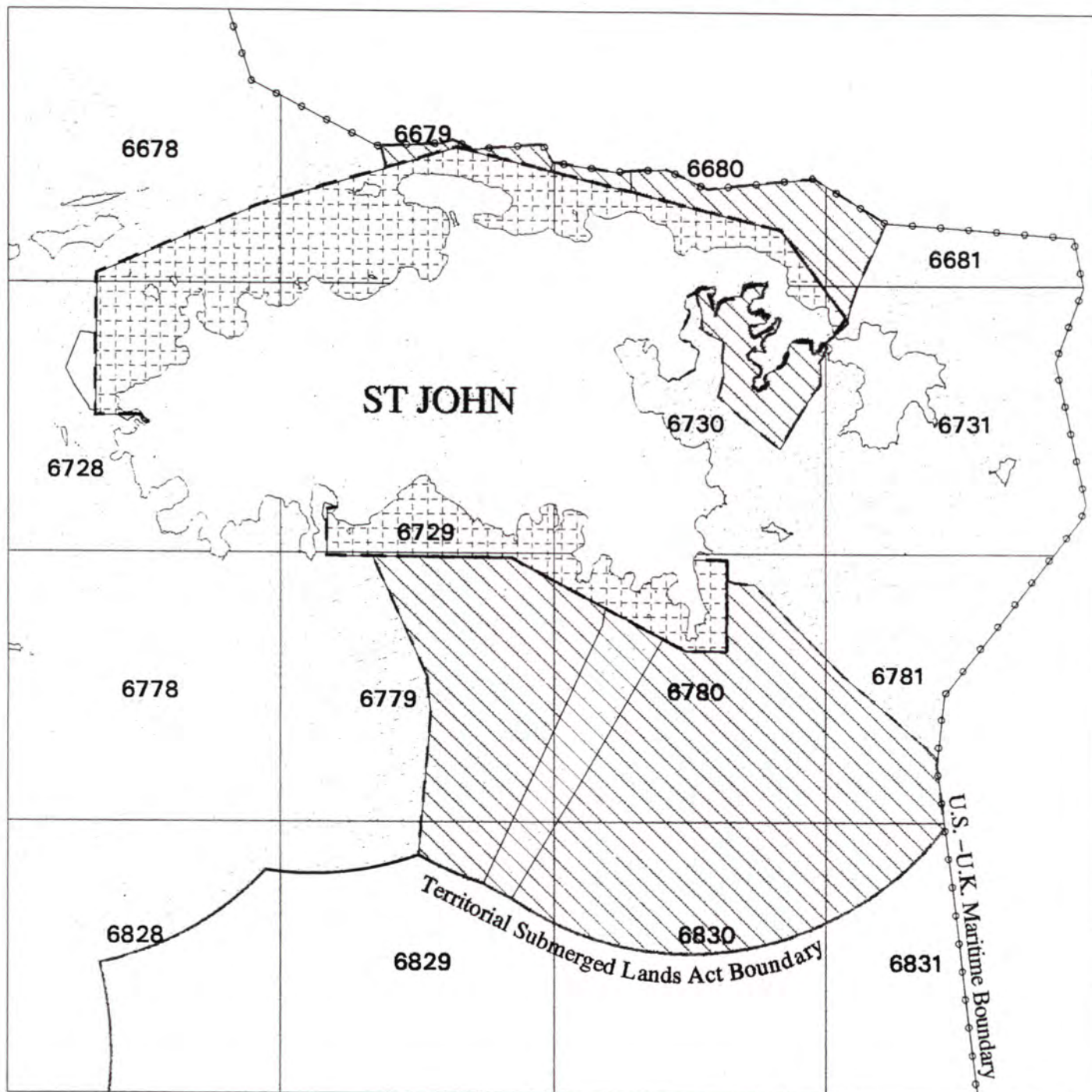
Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this xxxxx day of xxxxx, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fifth.

William J. Clinton

Proposed Virgin Islands Coral Reef National Monument



-  V.I. Territorial Submerged Lands
-  Federal Submerged Lands

-  Virgin Islands National Park
-  Proposed National Monument



Bibliography
Proposed Virgin Islands Coral Reef National Monument

Albright, A.B., 1974. "The excavation of the *Santa Monica*," Caribbean Research Institute, St. Thomas, USVI.

Albright, A.B., 1975. "Proton magnetometer survey of marine archeology sites in the Virgin Islands," Caribbean Research Institute, St. Thomas, USVI.

Appeldoorn, R.S., 1992. "Preliminary calculations of sustainable yields for queen conch (*Strombus gigas*) in Puerto Rico and the U.S. Virgin Islands," *Proc. Gulf Carib. Fish. Inst.* 41:95-105.

Appeldoorn, R., J. Beets, J. Bohnsack, S. Bolden, D. Matos, S. Meyers, A. Rosario, Y. Sadovy and W. Tobias, 1992. "Shallow water reef fish stock assessment for the U.S. Caribbean," NOAA Technical Memorandum NMFS-SEFSC-304.

Allen, M. and G. Nissen, 1990. "A long-term population study and continuation study on the population study of the West Indian Topshell, *Cittarium pica*," Research Projects Gustavus Adolphus College St. Peter, MN, January, 1990 conducted at Virgin Islands Ecological Research Station St. John, U.S. Virgin Islands.

Anderson, D. M., 1994. "Analysis and Modeling of Erosion Hazards and Sediment Delivery on St. John, U.S. Virgin Islands," Colorado State University. Thesis for Master's degree, submitted to the Department of Earth Resources, Colorado State University, 1994.

Armstrong, R., 1983. "Marine environments of Puerto Rico and the Virgin Islands: automated mapping and inventory using Landsat data," Caribbean Fishery Management Council, NOAA/NMFS.

Bak, R.P.M. and M.S. Engel, 1979. "Distribution, abundance and survival of juvenile hermatypic corals (Scleractinia) and the importance of life history strategies in the parent coral community," *Marine Biology* 54:341-352.

Bandler, B. (Ed), 1974. "Our troubled environment – can we save it?" *Proc. Conf. on the VI Environment*. Caribbean Research Institute, College of the Virgin Islands.

Barr, L., 1975. "Biology and behavior of the arrow crab, *Stenorhynchus seticornis* (Herbst), in Lameshur Bay, St. John, Virgin Islands. Results of the Tektite program: coral reef invertebrates and plants," editors S. A. Earle, and R.J. Lavenberg. Natural History Museum of Los Angeles County.

Barr, L., R. Cooper, R. Ellis, W. Herrnkind, I. Koblick and J. Van Derwalker, 1971. "Ecology and population dynamics of the spiny lobster, *Panulirus argus*, of St. John island, U.S. Virgin Islands," VI 34-57.

- Bayer, F.M., 1968. "A review of research and exploration in the Caribbean Sea and adjacent waters," Scientific Contribution No. from the Institute of Marine Sciences, University of Miami.
- Beets, J., 1993. "Fisheries-independent trap sampling in the U.S. Virgin Islands 1988-1992," Report for the Sea-map Caribbean Committee.
- Beets, J., 1993. "Assessment of shallow-water fisheries resources within Virgin Islands National Park and Buck Island Reef National Monument: Annual Report - FY 1992-93."
- Beets, J., 1996. "The effects of fishing and fish traps on fish assemblages within Virgin Islands National Park and Buck Island Reef National Monument," a technical report to the NPS.
- Beets, J., 1997. "Can coral reef fish assemblages be sustained as fishing intensity increases?" *Proc. 8th Int. Coral Reef Sym.* 2:2009-2014.
- Beets, J.P. and R.H. Boulon, 1985. "Habitat associations of reef fish assemblages within the V.I. Biosphere Reserve," Abstract, 65th Annual Meeting, *American Society Ichthyologists and Herpetologists*. 1985 : 40.
- Beets, J. and A. Friedlander, 1992. "Stock analysis and management strategies for red hind, *Epinephelus guttatus*, in the U.S. Virgin Islands," *Proc. Gulf Carib. Fish. Inst.* 42:66-79.
- Beets, J. and A. Friedlander, 1999. "Evaluation of a conservation strategy: a spawning aggregation closure for red hind, *Epinephelus guttatus*, in the U.S. Virgin Islands," *Environ. Biol. Fish.* 55:91-98.
- Beets, J., A. Friedlander, N. Wolff, R. Waara, and R. Grober, 1996. "Evaluation of some of the critical fisheries resources within Virgin Islands National Park: groupers, snappers, queen conch and spiny lobsters," Report to VINP, NPS.
- Beets, J. and L. Lewand, 1986. "Collection of common organisms within the Virgin Islands National Park/Biosphere Reserve," VIRMC I Report Series.
- Beets J., L. Lewand, and E. Zullo, 1986. "Marine community descriptions and maps of bays within the Virgin Islands National Park/Biosphere Reserve." *Virgin Islands Resource Management Cooperative Biosphere Reserve Research Report 2*. National Park Service.
- Bell, J.D. and R. Galzin, 1984. "Influence of live coral cover on coral reef communities," *Marine Ecology Program Service*, 15:265-274.
- Berkes, F., 1985. "Fishermen and 'The Tragedy of the Commons'," *Environ. Cons.* 12:199-206.

- Birkeland, C. and G. Brian, 1975. "Foraging behavior and rates of feeding of the gastropod *Cyphoma gibbosum* (Linnaeus)." In: *Results of the Tektite program: coral reef invertebrates and plants*, editors S. A. Earle, and R. J. Lavenberg. Natural History Museum of Los Angeles County.
- Bohnsack, J.A., 1982. "Effects of piscivorous predator removal on coral reef fish community structure," *Gutshop '81: Fish and Food Habits Studies*, Seattle, WA, Washington Sea Grant Program; 1982:258-267.
- Bohnsack, J.A., 1996. "Maintenance and recovery of reef fish productivity," Chapter 11. In (Polunin, N.V.C. and Roberts, C.M., editors.) *Reef Fisheries*. Chapman and Hall.
- Bohnsack, J.A., 1998. "Application of marine reserves to reef fisheries management," *Aust. J. Ecol.* 23:298-304.
- Bohnsack, J.A., 1998. "Marine reserves: lessons from Florida," *Proc. West Coast Rockfish: a Workshop*: 89-99.
- Bohnsack, J.A., 1999. "Incorporating no-take marine reserves into precautionary management and stock assessment," NOAA Technical Memorandum, Stock Assessment Workshop.
- Bohnsack, J. and J. Ault, 1996. "Management strategies to conserve marine biodiversity," *Oceanography* 9: 73-82.
- Bohnsack, J.A., D.L. Sutherland, A. Brown, D.E. Harper and D.B. McClellan, 1986. "An analysis of the Caribbean Biostatistical database for 1985," Miami Lab., S.E. Fish Ctr., NMFS, Coastal Res. Div. Contr. No. 86/87-10, Miami.
- Boucher, J. and L. Kellogg, 1989. "A comparison study of urchin densities and percent algal cover on five fringing reef sites following Hurricane Hugo on St. John, USVI," School for Field Studies.
- Boulon, R.H., 1986. "Adjacent fishery habitats of ecological importance to the fishery resources of the VI Biosphere Reserve," Biosphere Reserve Research Report No. 9, MAB, NPS, DOI.
- Boulon, R., 1986. "Map of fishery habitats within the Virgin Islands Biosphere Reserve," VIRMC Res. Report No. 8, Virgin Islands.
- Boulon, R., 1986. "Fisheries habitat of the Virgin Islands region of ecological importance to the fishery resources of the Virgin Islands Biosphere Reserve," VIRMC Res. Report No. 9, Virgin Islands.
- Boulon, R., 1986. "Long-term monitoring of fisheries in the Virgin Islands Biosphere Reserve," VIRMC Res. Report No. 13, Virgin Islands.

- Boulon, R., 1987. "A basis of long-term monitoring of fish and shellfish species in the Virgin Islands," Virgin Islands Resource Management Cooperative, Biosphere Reserve Research Report No. 22.
- Boulon, R.H., Jr., 1992. "Use of mangrove prop root habitats by fish in the northern Virgin Islands," *Proc., Gulf and Caribbean Fishery Institute*. 41:189-204.
- Boulon, R.H., 1994. "Growth Rates of Wild Juvenile Hawksbill Turtles, *Eretmochelys imbricata*, in St. Thomas, U.S. Virgin Islands," *Copeia*, 1994(3): 811 - 814.
- Boulon, R.H. and I.E. Clavijo, 1986. "Utilization of the Virgin Islands Biosphere Reserve by commercial and artisanal fishermen," Biosphere Reserve Research Report No. 11, MAB, NPS, DOI.
- Boulon, R.H. and N.B. Frazer, 1990. "Growth of wild juvenile Green turtles, *Chelonia mydas*," *Journal of Herpetology*. 24:441-445.
- Boulon, R.H., R.L. Norton and T.A. Agardy, 1982. "Status of the brown pelican [*Pelecanus occidentalis occ.*] in the USVI," Final Technical Report, USFWS, DOI.
- Boulon, R. H. and D.A. Olsen, 1982. "Some notes on the population biology of Green (*Chelonia mydas*) and Hawksbill (*Eretmochelys imbricata*) turtles in the U.S. Virgin Islands," Final Technical Report, USFWS, DOI.
- Boulon, R.H. and D.A. Olsen, 1982. "Virgin Islands Turtle Resources: aerial census results 1979 - 1980," Final Technical Report to National Marine Fisheries Service, NOAA Contract Nos. NA-79-GA-A-00133 and NA-80-GA-A-00055.
- Brandon, M., 1985. "Marine recreational fisheries statistics of the U.S. Virgin Islands, January 1983 to September 1985," *Proc. Gulf and Carib. Fish. Inst.* 38:665-683.
- Brewer, D.M., 1992. "An Archeological Overview and Assessment of Submerged Cultural Resources in Virgin Islands National Park (St. John and Hassel Islands), Buck Island Reef National Monument and Salt River National Historic Park and Ecological Preserve," A report for the NPS from the Southeast Archeology Center, NPS, Tallahassee, Florida.
- Brewer, D.M. and S. Hammerstein, 1988. "Archeology overview and assessment, Virgin Islands National Park, St. John, U.S. Virgin Islands," A report for the NPS from the Southeast Archeology Center, NPS, Tallahassee, Florida.
- Brickell, J.T., 1987. "Size distribution and density of *Strombus gigas* in Greater Lameshur Bay. St. John, USVI," School for Field Studies Student Research Reports Caribbean Program Sept.- December 1987.

Brownell, W. N. and W.E. Rainey, 1971. Special Report. "Research and development of deep water commercial and sport fisheries around the Virgin Islands Plateau," *Virgin Islands Ecol. Res. Stn.*, Carib. Res. Inst. Contr. 3, Virgin Islands.

Brownell, W.N. and J.M. Stevely, 1981. "The biology, fisheries, and management of the queen conch, *Strombus gigas*," *Mar. Fish. Rev.* 43(7).

Campbell, D.P. and B. Mckenzie, 1986. "A Population and Year Class Analyses of the *Cittarium pica* and its commensal, *Acmaea leucopleura*," Project Reports Gustavus Adolphus College January, 1986. Conducted at Virgin Islands Ecological Research Station.

Canoy, M.J., 1979. "Biological Survey of Inshore Reef Fish Communities at the Virgin Islands National Park St. John, United States Virgin Islands."

Caribbean Fishery Management Council, 1980. Source document for the environmental impact statement/fishery management plan and regulatory analysis for the spiny lobster fishery of Puerto Rico and the US Virgin Island.

Caribbean Fishery Management Council, 1981. Environmental impact statement/fishery management plan and regulatory analysis for the spiny lobster fishery of Puerto Rico and the US Virgin Island.

Caribbean Fishery Management Council, 1983. Draft. Volume II Appendices to the draft fisheries management plan for the Puerto Rican and Virgin Islands geologic platforms.

Caribbean Fishery Management Council, 1984. Draft fishery management plan, regulatory impact review, and environmental impact statement for the shallow-water reef fish fishery of Puerto Rico and the US Virgin Island.

Caribbean Fishery Management Council, 1985. Fishery Management Plan, Final Environmental Impact Statement, and Draft Regulatory Impact Review, for the Shallow-water Reef fish Fishery of Puerto Rico and the U.S. Virgin Islands.

Caribbean Fishery Management Council, 1994. Comments received during the comment period and at the public hearings for the draft fishery management plan, draft environmental impact statement, and draft regulatory impact review, for corals and reef associated plants and invertebrates for Puerto Rico and the United States Virgin Islands. NOAA/NMFS.

Caribbean Fishery Management Council, 1994. Draft Fishery Management Plan, regulatory impact review, and final environmental impact statement for corals and reef associated plants and invertebrates of Puerto Rico and the United States Virgin Island.

Caribbean Fishery Management Council, 1995. Draft Fishery Management Plan/RIR/EIS for the queen conch resources of Puerto Rico and the USVI.

Caribbean Fishery Management Council, 1999. Amendment Number 1 to the Fishery Management Plan for Corals and Reef Associated Plants and Invertebrates of Puerto Rico and the United States Virgin Islands for establishing a marine conservation district including regulatory impact review and initial regulatory flexibility analysis and a final supplemental environmental impact statement. NOAA/NMFS.

Carpenter, R.C., 1990. "Mass mortality of *Diadema antillarum*. I. Long-term effects on sea urchin population dynamics and coral reef algal communities," *Marine Biology* 104: 67-77.

Carpenter, R.C., 1990. "Mass mortality of *Diadema antillarum*. II. Effects on population densities and grazing intensities of parrotfishes and surgeonfishes," *Marine Biology* 104: 79-86.

Chakalall, B. and T. Geohegan, 1983. "Lesser Antillean Biosphere Reserve," *Parks* 8(2): 7-8.

Clark, H.L., 1933. "A handbook of the littoral echinoderms of Porto Rico and the other West Indian Islands," In *Scientific Survey of Porto Rico and the Virgin Islands* Volume XVI – Part I.

Clark, J.R. (Ed.), 1985. *Coasts*, Coastal Publication No. 3, Renewable Resources Information Series..

Clavijo, I., 1984. "Fishery statistics of the Virgin Islands: 1978-1983," NMFS, NOAA 2-335-R.

Clifton, H., and R. Hunter, 1972. "The sand tilefish, *Malacanthus plumieri*, and the distribution of coarse debris near West Indian coral reefs," In: Collette, B., and Earle, S. (eds.), *Results of the Tektite Program: Ecology of Coral Reef Fishes*. Nat. Hist. Mus. Los Angeles Ct. Sci. Bull. 14: 87-92.

Cobb, J.S., 1997. "Oceanic processes affecting lobster larvae: report for a workshop," CSIRO Australia, *Mar. Freshwater Res.* 48: 771-775.

Coblentz, B.E., 1995. "Reproductive Biology of the dwarf herring (*Jenkinsia lamprotaenia*) in the Virgin Islands," *Bulletin of Marine Science* 56:602-608.

Coblentz, B.E., 1997. "Subsistence consumption of coral reef fish suggests unsustainable extraction," *Conservation Biology* 11:559-561.

Collette, B.B. and S.A. Earle, eds., 1972. "Results of the Tektite Program: ecology of coral reef fishes," *Bull. Nat. Hist. Mus. L.A. County* 14.

Collette, B. and F. Talbot, 1972. "Activity patterns of coral reef fishes with emphasis on nocturnal-diurnal changeover," In: Collette, B. and Earle, S. (eds.), *Results of the Tektite Program: Ecology of coral reef fishes*. Nat. Hist. Mus. Los Angeles Ct. Sci. Bull. 14: 98-124.

Colin, P.L., 1992. "Reproduction of the Nassau grouper, *Epinephelus striatus* (Pisces: Serranidae) and its relationship to environmental conditions," *Environ. Biol. Fish.* 34:357-377.

Conservation Data Center (Univ. Virgin Islands) and NOAA. In preparation. Digitized aerial photographs and benthic habitat classification of the nearshore waters of the Virgin Islands.

Cooper, R.A., R. Ellis, and S. Serfling, 1975. "Population dynamics, ecology and behavior of spiny lobsters, *Panulirus argus*, of St. John, U.S.V.I. (III). Population estimation and turnover." In (Earle, S.A. and Lavenberg, R.J., editors.) The results of the Tektite program: coral reef invertebrates and plants. *Bull. Nat. Hist. Mus. L.A. County* 20: 11-16.

Cox, C., J.H. Hunt, W.G. Lyons and G.E. Davis, 1997. "Nocturnal foraging of the Caribbean spiny lobster (*Panulirus argus*) on offshore reefs of Florida, USA." *Mar. Freshwater Res.* 48:671-679.

Dahl, A.L., 1988. "Are human impacts through traditional or contemporary uses stabilizing or destabilizing to reef community structure?" *Proc. 6th Intl. Coral Reef Symp.* 63-69.

Dammann, A.E., 1969. Special Report. "Study of the Fisheries potential of the Virgin Islands." *Virgin Islands Ecol. Res. Stn. Contr. 1*, Virgin Islands.

Dammann, A., 1986. "Assesment of fish and shellfish stocks produced in the Biosphere Reserve." VIRMC Report No. 10, pp. 30.

Davis, D., N. Meyer, and L. Tinklenberg, 1984. "The Vertical distribution of meiofauna in Lesser Lameshur Bay U.S.V.I." Gustavus Adolphus College Research Reports Conducted at VIERS, 1984.

Davis, G.E., 1981. "On the role of underwater parks and sanctuaries in the management of coastal resources in the Southeastern United States." *Envir. Cons.* 8:67-70.

Davis, G.E., 1989. "Designated harvest refugia: the next stage of marine fishery management of coastal resources in the southeastern United States." *Envir. Cons.* 8:67-70.

Davis, G.E. and J.W. Dodrill, 1989. "Recreational fishery and population dynamics of spiny lobsters, *Panulirus argus*, in Florida Bay, Everglades National Park, 1977-1980." *Bull. Mar. Sci.* 44(1):78-88.

de Graf, J. and D. Moore, 1987. "Fisheries in Crisis." Conference Proceedings Government of the Virgin Islands of the United States, Department of Planning and Natural Resources, Division of Fish and Wildlife. September 24-25, 1987, St. Thomas, USVI.

Dixon, J.A., 1993. "Economic benefits of marine protected areas." *Oceanus.* 36:35-40.

DOI, N.P., 1986. "Bivalvia: A list of species collected at the Virgin Islands Ecological Research Station, St. John, U.S. Virgin Islands." This listing is based on the museum collection at VIERS and the collection at the State University College at Oneonta, New York.

DOI, N.P., 1986. "Gastropoda: A list of species collected at the Virgin Islands Ecological Research Station, St. John, U.S. Virgin Islands." This listing is based on the museum collection at VIERS and the collection at the State University College at Oneonta, New York.

Donnelly, T., 1959. "Geology of St. Thomas and St. John, Virgin Islands." Ph.D. dissertation, Princeton Univ., Princeton, NJ.

Donnelly, T., 1960. "The geology of St. Thomas and St. John, Virgin Islands." Trans. 2nd Carib. Geol. Conf., Mayaguez, PR.

Donnelly, T., 1966. "Geology of St. Thomas and St. John, U.S. Virgin Islands." In: Hess, H. (ed.), Caribbean geological investigations. *Geol. Soc. Amer. Mem.* 98: 85-176.

Downs, M.A. and J.S. Petterson, 1997. "Rapid Socioeconomic Evaluation of the Proposed Marine Conservation District St. John, United States Virgin Islands." Report prepared for the Caribbean Fisheries Management Council.

Dugan, J.E. and G.E. Davis, 1993. "Applications of marine refugia to coastal fisheries management." *Can. J. Fish. Aquat. Sci.* 50:2029-2042.

Earle, S.A., and R.J. Lavenberg (eds.), 1975. "The results of the Tektite program: coral reef invertebrates and plants." *Bull. Nat. Hist. Mus. L.A. County* 20: 103 pp.

Ebersole, J., 1977. "The adaptive significance of interspecific territoriality in the reef fish *Eupomacentrus leucostictus*." *Ecology* 58: 914-20.

Edmunds, P., 1991. "Extent and effect of black band disease on a Caribbean reef." *Coral Reefs* 10, no. 3: 161-65.

Edmunds, P., 1991. "The extent and effect of Black Band Disease on Caribbean Reefs." *Coral Reefs* 10:161-165.

Edmunds, P., 1993. "Long-term changes in reef communities in Lameshur Bay, St. John 1992." Annual Report to VIIS: Permit 92-13.

Edmunds, P. J. and J.D. Whitman, 1991. "Effect of Hurricane Hugo on the primary framework of reefs along the south shore of St. John, US Virgin Islands." *Marine Ecology Progress Series* 78: 201-4.

- Eggleston, D.B., 1995. "Recruitment in Nassau grouper *Epinephelus striatus* : post-settlement abundance, microhabitat features, and ontogenetic habitat shifts." *Marine Ecology Progress Series* 124:9-22.
- Erdman, D.S., 1968. "Spawning cycle, sex ratio and weight of blue marlin off Puerto Rico and the Virgin Islands." *Trans. Am. Fish. Soc.*, 97(2):131-137.
- Feazel, C.T., 1975. "Ecozonation and Sediment Distribution of Three Reef Areas on St. John, U.S. Virgin Islands." John Hopkins University. Ph.D. Dissertation.
- Fenchel, T., 1990. "Studies on the decomposition of organic detritus derived from the turtle grass *Thalassia testudinum*." *Limn. and Ocean.* 15:14-20.
- Fiedler, R.H. and N. D. Jarvis, 1932. "Fisheries of the Virgin Islands of the United States." U.S. Department of Commerce. Bureau of Fisheries Investigational Report No. 14. 1:1-32.
- Fitch, A., 1987. "The size structure and substrate preference of an *Oreaster reticulatis* population in Greater Lameshur Bay, St. John, USVI." School for Field Studies Student Research Reports Caribbean Program Sept.-December 1987.
- Flahive, W., 1975. *Phycological studies during Tektite II, at St. John, U.S.V.I. Results of the Tektite program: coral reef invertebrates and plants*, editors S. A. Earle and R. J. Lavenbert. Natural History Museum of Los Angeles County.
- Friedlander, A.M., 1997. "Status of queen conch populations around the northern US Virgin Islands with management recommendations for Virgin Islands National Park." Report for NBS, St. John.
- Friedlander, A.M., 1995. "The recreational fishery for blue marlin, *Makaira nigricans* (Pisces:Istiophoridae), in the U.S. Virgin Islands." *Fisheries Research* 22: 163-173.
- Friedlander, A.M., 1991. "Trends in the recreational billfish fishery in the U.S. Virgin Islands." ICCAT Working Document SCRS/90/85, pp. 107-112.
- Friedlander, A.M, R.S. Appeldoorn and J. Beets, 1994. "Spatial and temporal variations in stock abundance of queen conch, *Strombus gigas*, in the US Virgin Islands." In R.S. Appeldoorn and B. Rodriquez (eds.), *Queen conch biology, fisheries, and mariculture*. Fundacion Cientifica Los Roques, Caracas, Venezuela.
- Friedlander, A. and J. Beets, 1997. "Fisheries and population biology of dwarf herring (*Jenkinsia lamprotaenia*) in the US Virgin Islands." *Fisheries Science* 31:61-72.
- Garrison, G., 1998. "The scientific background of the Virgin Islands National Park Completion Project." A report for the National Park Service and Office of the Secretary of the Interior.

Garrison, J., 1993. "Mooring in the Virgin Islands National Park." Report to the National Park Service, Virgin Islands National Park.

Garrison, L., C. Homes, and J. Trumbull, 1971. "Geology of the insular shelf south of St. Thomas and St. John, U.S. Virgin Islands." *Carib. Res. Inst.*, Spec. Publ. No. 3, St. Thomas, VI.

Garrison, V.H., 1998. "Reef fishes of St. John, U.S. Virgin Islands." In M.J. Mac, P.A. Opler, C.E. Puckett Haecker and P.D. Doran, eds. *Status and trends of the nation's biological resources*, U.S. Department of the Interior, U.S. Geological Survey, Washington, D.C., 1:325-7.

Garrison, V.H., C.S. Rogers and J. Beets, 1998. "Of reef fishes, overfishing and in situ observations of fish traps in St. John, USVI." *Rev. Biol. Trop.*, 46 Supl. 5:41-59.

Garrison, V.H., C.S. Rogers, J. Beets and A.M. Friedlander. In review. "The habitats targeted and the fishes trapped in the St. John, US Virgin Islands trap fishery," *Bull. Mar. Sci.*

General Management Plan, 1983. "The general management plan, development concept plan, and environmental assessment for Virgin Islands National Park." National Park Service, Denver Service Center.

Gillespie, M., 1994. "A Comparison Study of Meiobenthos Between Five Different Habitats of Lesser Lameshur Bay, St. John, U.S.V.I." Project Reports, Gustavus Adolphus College January 1994. Conducted at Virgin Islands Ecological Research Station St. John, United States Virgin Islands.

Gladfelter, E., M. Anderson, H. Lund, and M. Davis, 1986. "Marine ecosystems of the Lesser Antilles: identification of representative sites." *Virgin Islands Biosphere Reserve Research Report Series*, No. 7, pp. 44.

Gladfelter, W.B., 1982. "White-band disease in *Acropora palmata*: implications for the structure and growth of shallow reefs." *Bull. Mar. Sci.*, 32(2):639-643.

Gladfelter, W.B., 1991. "Sponge and gorgonian communities at Yawzi Point, St. John, V.I." Report to the National Park Service, Virgin Islands National Park.

Gladfelter, W.B., 1991. Untitled: Results of Yawzi Point and Newfound Bay 1991 sponge and gorgonian survey. Report to the National Park Service, Virgin Islands National Park.

Gladfelter, W.B., 1992. "Changes in Sponge and Gorgonian community structure on Yawzi Point Reef in the third year after Hurricane Hugo." Report to the National Park Service, Virgin Islands National Park.

Gladfelter, W.B., 1993. "Annual change in sponge and gorgonian communities at Newfound Bay: comparison with Yawzi Point." Report to the National Park Service, Virgin Islands National Park.

Gladfelter, W.B., 1993. "Annual changes in sponge and gorgonian communities at Yawzi Point, St. John, V.I. 1991 to 1993."

Gladfelter, W.B., 1993. "Evaluation of Wind Spirit damage to sponge and gorgonian communities, St. John, V.I." A report submitted to the U.S. National Park Service. Report to the National Park Service, Virgin Islands National Park.

Gladfelter, W.B., 1995. "Assessment of sponge and gorgonian community structure in anchor-damaged reef after seven years, Francis Bay, St. John, USVI." Report to the National Park Service, Virgin Islands National Park.

Gladfelter, W.B. and E.H. Gladfelter, 1978. "Fish community structure as a function of habitat structure on West Indian patch reefs." *Rev. Biol. Trop.*, 26:65-84.

Gladfelter, W.B, J.C. Ogden and E.B. Gladfelter, 1980. "Similarity and diversity among coral reef fish communities: a comparison between tropical western Atlantic (Virgin Islands) and tropical central Pacific (Marshall Islands) patch reefs." *Ecology*, 61:1156-1168.

Goodridge, R., H.A. Oxenford, B.G. Hatcher and F. Narcisse, 1996. "Changes in the shallow reef fishery associated with implementation of a system of fishing priority and marine reserve areas in Soufriere, St. Lucia." *GCFI* 1996.

Goodwin, M., 1986. "Characterization of Lesser Antillean fisheries," *VIRMC* Report No. 14.

Gottlieb, M., 1989. "Age determination of *Strombus gigas* in Greater Lameshur Bay, St. John, USVI." Center for Marine Resources Spring 1989 Semester Student Research Reports.

Grover, J.J., D.B. Eggleston and J.M. Shenker, 1998. "Transition from pelagic to demersal phase in early-juvenile Nassau grouper, *Epinephelus striatus*: pigmentation, squamation, and ontogeny of diet." *Bull. Mar. Sci.* 62(1):97-113.

Grigg, D., and R. VanEepoel, 1972. Status report on bays of St. Thomas and St. John, Virgin Islands. Carib. Res. Inst., Water Poll. Report No. 19, St. Thomas, VI.

Hargraves, P.E., R.W. Brody, and P.R. Burkholder, 1970. "A study of phytoplankton in the Lesser Antilles region." *Bull. Mar. Sci.* 20:331-349.

Harvey, J.I., 1989. "Population density and distribution of *Strombus gigas* in Greater Lameshur Bay, St. John, U.S. Virgin Islands." Center for Marine Resources Spring 1989 Semester Student Research Reports.

Herrnkind, W.F. and M.J. Butler, 1986. "Factors regulating postlarval settlement and juvenile microhabitat use by spiny lobsters, *Panulirus argus* ." *Marine Ecology Program Service* 34:23-30.

Herrnkind, W.F., M.J. Butler, J.H. Hunt and M. Childress, 1997. "Role of physical refugia: implications from a mass sponge die-off in a lobster nursery in Florida." *Mar. Freshwater Res.* 48:759-769.

Herrnkind, W.F., M.J. Butler and R.A. Tankersley, 1988. "The effects of siltation on recruitment of spiny lobsters, *Panulirus argus*." *Fish. Bull.* 86:331-338.

Herrnkind, W.F., P. Jernakoff and M.J. Butler, 1994. "Puerulus and post-puerulus ecology." In: *Spiny lobster management* (Eds. B.F. Phillips, J.S. Cobb and J. Kittuka), Blackwell, Oxford.

Herrnkind, W.F., J.A. Van Derwalker, and L. Barr, 1975. *Population dynamics, ecology and behavior of spiny lobsters, Panulirus argus, of St. John, U.S.V.I.: (IV) Habitation, patterns of movement and general behavior. Results of the Tektite program: coral reef invertebrates and plants*, editors S.Earle and R. Lavenberg. Natural History Museum of Los Angeles County.

Hesse, K.O., 1979. "Movement and migration of the queen conch, *Strombus gigas*, in the Turks and Caicos Islands." *Bull. Mar. Sci.* 29:303-311.

High, W.L. and A.J. Beardsley, 1970. "Fish behavior studies from an undersea habitat." *Comm. Fish. Rev.* 32(10):31-37.

Hixon M.A., and J. Beets, 1993. "Predation, prey refuges, and the structure of coral reef fish assemblages." *Ecol. Mono.* 63: 77-101.

Holmes, C., 1977. "Sand resources study of the Northern Virgin Island insular shelf (St. Thomas-St. John): A prospectus." U.S. Geological Survey. Unpublished report.

Hopkins, R.T., R.E. Tucker, T.A. Roemer, J.D. Sharkey, and L.L. Aubin, 1984. "Analytical results from a geochemical survey of St. Thomas and St. John, U.S. Virgin Islands, using soil, rock, and panned concentrate samples." Open File report 84-785. U.S. Geological Survey.

Hubbard, D., 1987. "A general review of sedimentation as it relates to environmental stress in the Virgin Islands Biosphere Reserve and the Eastern Caribbean in general." U.S. National Park Service. *Biosphere Reserve Report* No. 20. Island Resource Foundation, St. Thomas, VI, pp. 41.

Hubbard, D.K., J.D. Stump, and B. Carter, 1987. "Sedimentation and reef development in Hawksnest, Fish and Reef Bays, St. John, US Virgin Islands." Virgin Islands Resource Management Cooperative. *Biosphere Reserve Research Report* No. 21, pp. 99.

Hughes, T.P., 1994. "Catastrophes, phase shifts. and large-scale degradation of a Caribbean coral reef." *Science* 265: 1547-1551.

Hwang, M., 1987. "Feeding Behavior of *Strombus gigas* and *Strombus costatus*." School for Field Studies Student Research Reports Caribbean Program Sept.-December 1987.

Idyll, C.P., 1959. "The commercial fishery of St. John." Report to the National Park Service.

Idyll, C.P and J.E. Randall, 1959. "Sport and commercial fisheries potential of St. John, Virgin Islands." 4th Int'l Game Fish Conf., Nassau. 10 pp.

Insular Environments, Inc., 1973. "Preliminary environmental evaluation of proposed developments at Fish Bay, St. John." Prepared for Cocoloba Dev. Assoc., St. John, VI.

Island Resources Foundation, 1989. Eastern Caribbean parks and protected areas bibliography. St. Thomas, USVI, pp. 43.

Island Resources Foundation, 1993. "St. John Coral Bay Area of Particular Concern (APC) draft management plan." Prepared for the Department of Planning and Natural Resources/Division of Coastal Zone Management. St. Thomas, USVI.

Jacobsen, T. and J.A. Browder, 1986. "The ecological basis of yield of fisheries of the Puerto Rican-Virgin Islands shelf. A habitat perspective." NOAA, NMFS, PP.

Jennings, C.A., 1992. Survey of non-charter boat recreational fishing in the U.S. Virgin Islands." *Bull. Mar. Sci.*, 50(2): 342-351.

Jennings, S. and N.V.C. Polunin, 1996. "Effects of fishing effort and catch rate upon the structure and biomass of Fijian reef fish communities." *Journal of Applied Ecology* 33: 400-412.

Jennings, S. and N.V.C. Polunin, 1996. "Impacts of fishing on tropical reef ecosystems." *Ambio*, 25:44-49.

Jerrard, J.H., 1843. *Letters from the Virgin Islands: illustrating life and manners in the West Indies*. London, John Van Voorst.

Johnson, M. and S. Stutsman, 1984. "A Horizontal study of meiofauna in Lesser Lameshur Bay, St. John." Gustavus Adolphus College Research Reports Conducted at VIERS.

Johnston, B.R., 1982. Paleocological Research in the Virgin Islands. Abstracts of the Colloquium on Long-term Ecological Research in the Virgin Islands, compiler and editor B. Brander and J. Wood, p. 10. Atlanta, GA: National Park Service, Southeast Regional Office.

Jory, De and E.S. Ivorsen, 1989. "Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (South Florida), black, red and Nassau groupers." *U.S. Fish Wildlife Serv, Biol. Rept* 82.

Kalina, K.J., and A.L. Nelson, 1986. "Daily migration of interstitial fauna within the intertidal zone of Lesser Lameshur Bay, St. John, U.S.V.I." Project Reports Gustavus Adolphus College January, 1986 Conducted at Virgin Islands Ecological Research Station, St. John, U.S. Virgin Islands.

- Kingsford, M.J. and J.H. Choat, 1986. "The influence of surface slicks on the distribution and onshore movements of small fish." *Marine Biology* 91:161-171.
- Kingsford, M.J., E. Wolanski and J.H. Choat, 1991. "Influence of tidally induced fronts and Langmuir circulations on distributions and movements of presettlement fishes around a coral reef." *Marine Biology* 109: 167-180.
- Koester, S., n.d. "Socioeconomic and cultural role of fishing and shellfishing in the Virgin Islands Biosphere Reserve." Virgin Islands Resource Management Cooperative. Biosphere Reserve Research Report No. 12.
- Koslow, J.A., F. Hanley, and R. Wicklund, 1988. "Effects of fishing on reef fish communities at Pedro Bank and Port Royal Cays, Jamaica." *Marine Ecology Progress Series* 43:210-212.
- Kumpf, H., and H. Randall, 1961. "Charting the marine environments of St. John, U.S. Virgin Islands." *Bull. Mar. Sci.* 11: 543-551.
- Lee, C.C., E.L. Lee, and J.S. Bunt, 1975. "Distribution of biomass in a coral reef transect." *Results of the Tektite program: coral reef invertebrates and plants*, editors S. Earle and R. Lavenberg. Natural History Museum of Los Angeles County.
- Levitan, D.R., 1987. "Indeterminate growth and grazing of the sea urchin *Diadema antillarum* (Philippi): evidence of release from food limitation following a major perturbation."
- Levitan, D.R., 1988. "Algal-urchin biomass responses following the mass mortality of the sea urchin *Diadema antillarum* Philippi at St. John, US Virgin Islands." *J. Exp. Mar. Biol. Ecol.* 119: 167-178.
- Levitan, D.R., 1989. "Density-dependent size regulation in *Diadema antillarum*: effects on fecundity and survivorship." *Ecology* 70: 1414-1424.
- Levitan, D.R., 1991. "Influence of body size and population density on fertilization success and reproductive output in a free-spawning invertebrate." *Biology Bulletin* 181: 261-68.
- Levitan, D.R., and S.J. Genovese, 1989. "Substratum-dependent predator-prey dynamics: patch reefs as refuges from gastropod predation." *J. Exp. Mar. Biol. Ecol.*
- Lipcius, R.N., W.T. Stockhausen, D.B. Eggleston, L.S. Marshall and B. Hickey, 1997. "Hydrodynamic decoupling of recruitment, habitat quality and adult abundance in the Caribbean spiny lobster: source-sink dynamics?" *Mar. Freshwater Res.*, 48:807-815.
- Magnusson, J.K and J. Moore, 1994. "Population and spatial distribution estimate of *Strombus gigas* in Greater and Lesser Lameshur Bay, St. John. U.S.V.I." Project Reports, Gustavus Adolphus College. Conducted at Virgin Islands Ecological Research Station.

- Marx, J.M. and W.F. Herrnkind, 1985. "Macroalgae (Rhodophyta: *Laurencia* spp.) as habitat for young juvenile spiny lobsters, *Panulirus argus*." *Bull. Mar. Sci.* 36:423-431.
- Marx, R.F. and E.L. Towle, 1971. *Shipwrecks of the Virgin Islands (1523-1825)* Second Edition. Caribbean Research Institute, St. Thomas, USVI.
- Mathieson, A., et al., 1975. "Phycological studies during Tektite II, at St. John, U.S.V.I." In: Earle, S., and Lavenberg, R. (eds.), *Results of the Tektite Program: Coral reef invertebrates and plants*. Nat. Hist. Mus. Los Angeles Sci. Bull. 20: 77-103.
- McLain, L.N., C.S. Rogers, and S.W. Baker, 1989. "Recovery of bleached scleractinian corals in Virgin Islands National Park, St. John, U.S. Virgin Islands." National Park Service Report.
- Mendelson, T., 1992. "Hawksbill Sea Turtle Nesting and Hatching Activities St. John, U.S. Virgin Islands 1991."
- Milsten, S., 1987. "Substrate and feeding preferences of the fireworm, *Hermodice carunculata* (PALLAS)." School for Field Studies Student Research Reports Caribbean Program Sept.-Dec. 1987.
- Minerals Management Service, In development. Supplemental Official Outer Continental Shelf Block Diagrams, U.S. Virgin Islands.
- Mount, H.R., J.R. Davis, R.F. Paetzold, and M. Cortes-Colon, 1995. "Climatic Data for the Lameshur Bay Watershed, St. John Island for 1994." U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey Division, National Soil Survey Center, Lincoln, NE.
- Mount, H., R. Vick, and J. Davis, 1993. "Analysis of Soil Climate Data from Lameshur Bay Watershed, St. John Island, United States Virgin Islands, Soil Conservation Service."
- Muehlstein, L., 1992. "Seagrass disturbances in Greater Lameshur Bay, St. John."
- Muehlstein, L., 1997. "Rhizophytic algal successional patterns within a disturbed seagrass community." *Proc. 8th Int. Coral Reef Sym.* 1:495-498.
- Muehlstein, L.K., and J. Beets, 1999. "Disturbance weakens the positive enhancement of seagrass-coral reef interactions." Fifteenth Biennial International Conference of the Estuarine Research Federation. September, 1999. New Orleans, LA. (abstract).
- Munro, J.L. (Ed.), 1983. "Caribbean Coral Reef Fishery Resources." ICLARM Stud. Rev. 7. Int. Cent. Living Aquat. Resour. Mgmt., Manila.

Munro, J.L. and D. McB. Williams, 1985. "Assessment and management of coral reef fisheries: biological, environmental and socio-economic aspects." *Proc. 5th Intl. Coral Reef Cong*, Tahiti, 1985, 4:544-581.

Munro, J.L. and I.R. Smith, 1984. "Management strategies for multispecies complexes in artisanal fisheries." *Proc. Gulf Carib. Fish. Inst.* 36:127-41.

National Marine Fisheries Service, Southeast Region and Caribbean Fisheries Management Council, 1993. "Initial regulatory flexibility analysis and regulatory impact review for Amendment 2 to the Fishery Management Plan for the Shallow-water reef fish fishery of Puerto Rico and the U.S. Virgin Islands"

Nelson, W.R. and R.S. Appeldoorn, 1985. Cruise Report R/V/ Seward Johnson. "A submersible survey of the continental slope of Puerto Rico and the U.S. Virgin Islands," October 1-23, 1985.

Nelson, W.R., A.K. Shah, and G.M. Russel, 1984. "A review of results of the National Marine Fisheries Service deep water longline surveys around Puerto Rico and the Virgin Islands, 1980-1984."

Nichols, J.T., 1929. "The fishes of Porto Rico and the Virgin Islands: Branchioscomidae to Sciaenidae." New York: New York Academy of Sciences. Scientific Survey of Porto Rico and the Virgin Islands Volume X – Part 2.

Nichols, J.T., 1930. "The fishes of Porto Rico and the Virgin Islands: Pomacentridae to Ogcocephalidae." New York: New York Academy of Sciences. Scientific Survey of Porto Rico and the Virgin Islands Volume X – Part 3.

Norton, R., 1986. "Birds of St. John, U.S.V.I.: A National Park Checklist." Eastern Parks and Monuments Association.

Nowlis, J.S. and C.M. Roberts, 1997. "You can have your fish and eat it too: theoretical approaches to marine reserve design." *Proc. 8th Int. Coral Reef Sym* 2:1907-1910.

Ogden, J.C., 1988. "The influence of adjacent systems on the structure and function of coral reefs." *Proc. 6th Intern. Coral Reef Symp.* 1:123-129.

Ogden, J.C., R.A. Brown, and N. Salesky, 1973. "Grazing by the echinoid *Diadema antillarum* Philippi: formation of halos around West Indian patch reefs." *Science* 182:715-717.

Ogden, J.C., and J.P. Ebersole, 1981. "Scale and community structure of coral reef fishes: a long-term study of a large artificial reef." *Marine Ecology - Progress Series* 4: 97-103.

Ogden, J.C. and E.H. Gladfelter (eds.), 1983. "Coral reefs, seagrass beds and mangroves: their interaction in the coastal zones of the Caribbean." UNESCO Rep. In *Marine Science* 23:6-16.

Ogden, J.C. and J.C. Zieman, 1977. "Ecological aspects of coral reef-seagrass bed contacts in the Caribbean." *Proc. Intl Symp. Coral Reefs*, 3(3):377-382.

Olsen, D.A., R. Boulon, and G.R. McCrain, 1981. "An analysis of the St. Thomas fishery with special reference to the benthic communities of the shelf south of St. Thomas, U.S. Virgin Islands." Final Report, NOAA, DOC, Contract Nos. NA- 79RAC00158 and NA-81RAA02977.

Olsen, D.A., A.E. Dammann, J.F. Hees, J.R. Sylvester, and J.A. Yntema, 1973. "The ecology of fishes in two mangrove lagoons in the U.S. Virgin Islands." Puerto Rico International Underseas Laboratory, Spec. Rep. No. 4.

Olsen, D.A., A.E. Dammann, and J.A. LaPlace, 1975. "Analysis of catch data of the Virgin Islands commercial fisheries," Annual Report, Segment I, Project 2-239, R-1.

Olsen, D.A., A.E. Dammann, and J.A. LaPlace, 1978. "Mesh selectivity of West Indian Fish Traps." *Mar. Fish. Rev.* 40:15-16.

Olsen, D.A., W.F. Herrnkind, and R.A. Cooper, 1975. "Population dynamics, ecology and behavior of spiny lobsters, *Panulirus argus*, of St. John, U.S.V.I." (I) Introduction and general population characteristics. In (Earle, S.A. and Lavenberg, R.J., eds.) *The results of the Tektite program: coral reef invertebrates and plants*. Bull. Nat. Hist. Mus. L.A. County 20: 17-22.

Olsen, D.A., W. Herrnkind, and I.G. Koblick, 1971. "Ecological study for the development of lobster management techniques." PRINUL Special Report No. 1.

Olsen, D.A. and J.A. LaPlace, 1978. "A study of a Virgin Islands grouper fishery based on a breeding aggregation." *Proc. Gulf Carib. Fish. Inst.* 131:130-144.

Olsen, D.A., and G.R. McCrain, 1980. "An analysis of the St. Thomas fishery with special reference to the south west roads area." NOAA Dept. Com. Rep..

Olsen, D.A., and R.S. Wood, 1983. "The marine resource base for marine recreational fisheries in the Caribbean." *Proc. Gulf. Carib. Fish. Inst.*, 35: 152-160.

Olsen, D.A., R.S. Wood, and W.J. Tobias, 1983. "A preliminary economic analysis of cost returns of commercial fishermen using traps along the insular shelf of the U.S. Virgin Islands." Dept. Cons. and Cult. Affairs – Div. Fish and Wildlife, NMFS Ann. Rept.

Otterness, P.D., and A.A. Estrin, 1994. "The Settlement of Spiny Lobsters, *Panulirus argus*, in Greater Lameshur Bay, St. John, U.S.V.I." Project Reports, Gustavus Adolphus College January 1994 Conducted at Virgin Islands Ecological Research Station St. John, US Virgin Islands.

- Owenby, J.R. and D.S. Ezell, 1992. "Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 1961-90: Virgin Islands." National Oceanic and Atmospheric Administration, Asheville, NC.
- Pauly, D., V. Christense, J. Dalsgaard, R. Forese, and F. Torres, Jr., 1998. "Fishing down marine food webs." *Science* 279: 860-863.
- Peck, S.B., 1975. "A review of the New World Onychophora with the description of a new cavernicolous genus and species from Jamaica." *Psyche* 82: 341-58.
- Plan Development Team, 1990. "The potential of marine fishery reserves for reef fish management in the U.S. southern Atlantic." NOAA Tech. Mem. NMFS SEFC-261.
- Polunin, N.V.C. and C.M. Roberts, 1993. "Greater biomass and value of target coral-reef fishes in two small Caribbean marine reserves." *Marine Ecology Program Service*, 100:167-176.
- Pomeroy, R.S., 1999. "Economic analysis of the British Virgin Islands Commercial Fishing Industry." International Center for Living Aquatic Resources Management.
- Posner, B., 1981. "Economic impact analysis for the Virgin Islands National Park." Prep. for U.S. Nat. Park Service. Island Resources Foundation, St. Thomas, VI.
- Price, R., 1966. "Caribbean fishing and fishermen: an historical sketch." *American Anthropology* 6:1363-1383.
- Provenzano, A., 1961. "Pagaorid crabs (Decapoda Anomura) from St. John, V.I. with descriptions of three new species." *Crustaceana*, 3(2):151-166.
- Prow, A.M. and C.B. Schimelpfenig, 1994. "A population density study of six marine Porifera species, *Haliclona rubens*, *Ircinia strobilina*, *Agelus* sp., *Callyspongia vaginalis*, *Ircinia campana*, and *Sphaciospongia vesparium*." Project Reports, Gustavus Adolphus College. Conducted at Virgin Islands Ecological Research Station.
- Purcell, T.W., 1980. "The Effects of Rainfall Runoff on Two Undeveloped Tropical Bays in St. John, U.S. Virgin Islands," Technical Report No. 5. Water Resources Research Center, Caribbean Research Institute, College of the Virgin Islands, St. Thomas, USVI.
- Putney, A., 1987. "Conceptual framework for the management of the Virgin Islands Biosphere Reserve." U.S. National Park Service. Biosphere Reserve Report No. 28. Island Resources Foundation, St. Thomas, VI.
- Quincey, T., 1989. "The Relationship between boat anchoring and *Chelonia mydas* populations in Greater Lameshur Bay, St. John, U.S.V.I." Center for Marine Resources Spring 1989 Semester Student Research Reports.

- Quandt, A., 1999. "Assessment of fish trap damage on coral reefs around St. Thomas, USVI." Report to UVI.
- Ramos-Perez, C. R. and C. Gines-Sanchez, 1988. "Geochemistry of St. John and influence on marine systems," Biosphere Reserve Research Report No. 28. National Park Service and Virgin Islands Resource Management Cooperative.
- Ramsarran, C., 1992. "Simulation of the Effects of Urbanization on Soil Loss and Runoff from a Small Tropical Watershed Using the ANSWERS Model." Colorado State University, Department of Earth Resources.
- Randall, H.A., 1964. "A study of the growth and other aspects of the biology of the West Indian topshell, *Cittarium pica* (Linnaeus)." *Bull. Mar. Sci. Gulf & Carib.* 14:424 – 443.
- Randall, J.E., 1961. "Tagging reef fishes in the Virgin Islands." *Proc. Gulf Carib. Fish Inst.* 14:201-241.
- Randall, J.E., 1961. "Reef and inshore fishery research and reef fish ecology St. John, VI." Report to the National Park Service.
- Randall, J.E., 1963. "An analysis of the fish populations of artificial and natural reefs in the West Indies." *Carib. J. Sci.* 3: 31-47.
- Randall, J.E., 1964. "Contributions to the biology of the queen conch, *Strombus gigas*." *Bull. Mar. Sci.* 14:246-295.
- Randall, J.E., 1965. "Grazing effect on sea grasses by herbivorous reef fishes in the West Indies." *Ecology* 46: 255-260.
- Randall, J.E., 1967. "Food habits of reef fishes of the West Indies." *Studies in Trop. Ocean.* 5: 665-847.
- Randall, J.E., 1996. *Caribbean Reef Fishes*. T.F.H. Publications, Hong Kong.
- Rakitan, A. and D.L. Kramer, 1996. "Effect of a marine reserve on the distribution of coral reef fishes in Barbados." *Marine Ecology Program Service* 131:97-113.
- Richards, W.J. and J.A. Bohnsack, 1990. "The Caribbean Sea: A large ecosystem in crisis." From *Large Marine Ecosystems: pattern, processes, and yields*. AAAS. Chapter 4.
- Risk, M.J., 1972. "Fish diversity on a coral reef in the Virgin Islands." *Atoll Res. Bull.*, 153:1-6.
- Robblee, M.B., 1987. "The spatial organization of the nocturnal fish fauna of a tropical seagrass feeding ground." Ph.D. dissertation: University of Virginia.

- Robblee, M.B. and J.C. Zieman, 1984. "Diel variation in the fish fauna of a tropical seagrass feeding ground." *Bull. Mar. Sci.*, 34(3):335-345.
- Roberts, C.M., 1997. "Connectivity and management of Caribbean coral reefs." *Science*, 278:1454-1457.
- Roberts, C. M., and J.P. Hawkins, 1997. "How small can a marine reserve be and still be effective?" *Coral Reefs* 16: 150.
- Roberts, C.M. and N.V.C. Polunin, 1993. "Marine reserves: simple solutions to managing complex fisheries?" *Ambio*, 22:363-368.
- Robertson, W., 1957. "Biology report – Initial study and development survey, Virgin Islands National Park." Office Report, VINP, St. Thomas, VI.
- Robertson, W., 1962. "Observations on the birds of St. John, Virgin Islands." *The Auk* 79:44-76.
- Robertson, W., E. Peetz, and R. Haraden, n.d. "A report on park development recommendations: Virgin Islands National Park." East. Off., Div. Design & Constr., Nat. Park Serv., Washington, D.C.
- Robins, C.R., 1971. "Distributional patterns of fishes from coastal and shelf waters of the tropical western Atlantic." Sym. On investigation of resources of the Caribbean Sea and adjacent regions. Paper on fishery resources. FAO, Rom.
- Robins, C.R., 1991. "Regional diversity among Caribbean fish species." *BioScience*. 41(7):458-459.
- Robinson, A., 1973. "Natural vs. visitor-related damage to shallow water corals: recommendations for visitor management and the design of underwater nature trails in the Virgin Islands." National Park Service Report..
- Rogers, C.S., 1985. "Degradation of Caribbean and western Atlantic coral reefs and decline of associated fisheries." Proc 5th Int Coral Reef Congress 6: 491-496.
- Rogers, C., 1988. "Recreational uses of marine resources in the Virgin Islands National Park and Biosphere Reserve: trends and consequences."
- Rogers, C., 1990. "Responses of coral reefs and reef organisms to sedimentation." *Marine Ecology Program Service* 62: 185-202.
- Rogers, C.S., 1998. "Status and trends of coral reefs in St. John, U.S. Virgin Islands." In Mac, M.J., P.A. Opler, C.E. Puckett Haecker and P.D. Doran, eds. *Status and trends of the nation's biological resources*, U.S. Department of the Interior, U.S. Geological Survey, Washington, D.C.

- Rogers, C., 1999. "Dead *Porites* patch reefs, St. John, US Virgin Islands." *Coral Reefs*. 18:254.
- Rogers, C.S., In press. "The status of the coral reefs of the US Virgin Islands (2000)." In: *Status of the US coral reefs*. NOAA.
- Rogers, C.S., G. Garrison, R. Grober, Z. Hillis, and M.A. Franke, 1994. "Coral reef monitoring manual for the Caribbean and Western Atlantic."
- Rogers, C.R., V.H. Garrison and L.E. Grober-Dunsmore, 1997. "A fishy story about hurricanes and herbivory: Seven years of research on a reef in St. John, U.S. Virgin Islands." *8th Int. Coral Reef Sym.* 1:555-560.
- Rogers, C.S. and V. H. Garrison, In press. "Ten years after the crime: lasting effects of damage from a cruise ship anchor on a coral reef in St. John, USVI." NCRI conference proceedings, *Bull. Mar. Sci.*.
- Rogers, C., L. McLain, and C. Tobias, 1991. "Effects of Hurricane Hugo (1989) on a coral reef in St. John, USVI." *Marine Ecology Program Service* 78: 189-199.
- Rogers, C.S., L.N. McLain, and E. Zullo, 1988. "Damage to coral reefs in Virgin Islands National Park and biosphere reserve from recreational activities." *Proc. 6th Int. Coral Reef Symp.* 2: 405-410.
- Rogers, C. S., and J. Miller, In press. "Coral bleaching, hurricane damage, and benthic cover on coral reefs in St. John, US Virgin Islands: a comparison of surveys with the chain transect method and videography." *Proceedings of National Coral Reef Institute Conference*. April 1999.
- Rogers, C., and R. Teytaud, 1988. "Marine and terrestrial ecosystems of the Virgin Islands National Park and Biosphere Reserve." Biosphere reserve research report no. 29.
- Rogers, C S. and E S. Zullo, 1987. "Initiation of a long-term monitoring program for coral reefs in the Virgin Islands National Park." Biosphere Reserve Research Report No. 17. National Park Service and Virgin Islands Resource Management Cooperative.
- Ross, J.P., 1983. "Coral reef studies at Princess Cove, St. John, U.S.V.I.: cruise report of r/v Regina Maris - Expedition #49, 15 Oct.-22 Nov., 1983." Ocean Research and Education Society, Gloucester, Massachusetts.
- Russ, G.R., 1991. "Coral reef fisheries: effects and yields." In: P.F. Sale (ed) *The ecology of fishes on coral reefs*. Academic Press, San Diego, CA.
- Sadovy, Y., 1994. "Grouper stocks and their management in the Caribbean." *Proc. Gulf Carib. Fish. Inst.* 43:43-64.

- Salm, R.V., 1984. "Ecological boundaries for coral-reef reserves: principles and guidelines." *Environ. Cons.*, 11: 209-215.
- Shapiro, D.Y. and R.H. Boulon, 1987. "Evenly dispersed social groups and intergroup competition for juveniles in a coral reef fish." *Behav. Ecol. Sociobiol.*, 21: 343 - 350.
- Sluka, R., 1997. "The benefits of a marine fishery reserve for Nassau grouper *Epinephelus striatus* in the central Bahamas." *Proc. 8th Int. Coral Reef Sym* 2:1961-1964.
- Sluka, R., M. Chiappone and K.M. Sullivan, 1994. "Comparison of juvenile grouper populations in southern Florida and the central Bahamas." *Bull. Mar. Sci.* 54(3):871-880.
- Sluka, R., M. Chiappone, K.M. Sullivan, T.A. Potts, J.M. Levy, E.F. Schmitt, and G. Meester, 1998. "Density, species and size distribution of groupers (Serranidae) in three habitats at Elbow Reef, Florida Keys." *Bull. Mar. Sci.* 62(1):219-228.
- Sluka, R., M. Chiappone, K.M. Sullivan, and R. Wright, 1996. "Habitat and Life in the Exuma Cays, The Bahamas." *The Nature Conservancy*. Miami.
- Small, E., 1982. "Sea turtle nesting at Virgin Islands National Park and Buck Island Reef National Monument." Abstracts of the Colloquium on Long-term Ecological Research in the Virgin Islands. National Park Service, Southeast Regional Office.
- Small, V., 1982. "Sea turtle nesting at Virgin Islands National Park and Buck Island Reef National Monument, 1980-1981." Research/Resource Management Report SER-61, DOI, NPS, SERO, pp.54. Nesting of *Eretmochelys imbricata* at VIIS.
- Smith, B., 1992. "Fisheries Project Report." A report to Virgin Islands National Park on an NRPP funded fishery assessment project.
- Smith, B., 1993. "Updated fisheries project report: information gathering and port sampling." A report to Virgin Islands National Park on an NRPP funded fishery assessment project.
- Smith, C.K., 1989. "A Comparison of the Relative Abundance and Mean Diameter of Scleractinian Corals before and after Hurricane Hugo." School for Field Studies.
- Smith, C.L., 1972. "A breeding aggregation of Nassau groupers *Epinephelus striatus* in the Bahamas." *Trans. Amer. Fish. Soc.*
- Sogard, S.M., G.V.N. Powell, and J.G. Holmquist, 1989. "Spatial distribution and trends in abundance of fishes residing in seagrass meadows on Florida Bay mudbanks." *Bull. Mar. Sci.* 44:179-199.
- Schroeder, R.E., 1965. *Something Rich and Strange*. Harper and Row, Publishers. New York.

- Stoner, A.W. and M. Ray, 1996. "Queen conch, *Strombus gigas*, in fished and unfished locations of the Bahamas: effects of a marine fishery reserve on adults, juveniles, and larval production." *Fishery Bulletin* 94(3):551-565.
- Stoner, A.W. and V.J. Sandt, 1992. "Population structure, seasonal movements, and feeding of queen conch, *Strombus gigas*, in deep-water habitats of the Bahamas." *Bull. Mar. Sci.* 51(3):287-300.
- Stoner, A.W., V.J. Sandt and I.F. Boidron-Metairon, 1992. "Seasonality in reproductive activity and larval abundance of queen conch, *Strombus gigas* L. (Gastropoda: Strombidae)." *Fish. Bull.*, U.S. 90:161-170.
- Swingle, W.E., A.E. Dammann and J.A. Yntema, 1970. "Survey of the commercial fishery of the Virgin Islands of the United States." *Proc. Gulf. Carib. Fish. Inst.* 20:110-121.
- Sylvester, J., A. LaPlace, and R. Quetel, 1977. "Analysis of catch data for the Virgin Islands fishery, 1976-1977." Department of Conservation and Cultural Affairs, PL 88-309 Report: Project No. 2-239-R-3.
- Sylvester, J.R. and A.E. Dammann, 1972. "Pot fishing in the Virgin Islands." *Mar. Fish. Rev.* 34:33-35.
- Thomas, S., 1987. "Population studies of *Ascidia nigra* in Greater Lameshur Bay, St. John, USVI." School for Field Studies Student Research Reports Caribbean Program.
- Thome, J. and D. Torgerson, 1984. "A study of population and distribution of the mangrove tree crab: *Aratus pisonii*." Gustavus Adolphus College Research Reports. Conducted at VIERS.
- Thompson, R. and J. Munro, 1974. "The biology, ecology, exploitation and management of Caribbean reef fishes. V. The biology, ecology and bionomics of Caribbean reef fishes: Vd. Lutjanidae (snappers)." Zool. Dept. Univ. West Indies. Res. Rep. 3, Kingston, Jamaica.
- Tobias, W.J., 1987. "Resource evaluation of the bigeye scad, *Selar crumenophthalmus* (Bloch), in the insular shelf waters around St. Croix, U.S. Virgin Islands." *Proc. Gulf. And Carib. Fish. Inst.* 40th Ann. Sess., Curacao, N.A..
- Tobias, W., 1997. "Three year summary report (April 1994-March 1997)." Cooperative Fishery Statistics Program #sf-42 (NA27FT0301-01).
- Towle, E., 1978. "Report on sea turtle nesting, sighting, eggs and hatchlings for 1978 in the U.S. Virgin Islands and a recommended research methodology for dealing with hatchling disorientation on the beach." Island Resources Foundation.

Towle, E.L., 1995. "Guidelines for integrated planning and management of coastal and marine areas in the wider Caribbean region." Island Resources Foundation. Kingston, Jamaica: United National Environment Program, Caribbean Environment Program, Regional Coordinating unit.

Towle, E. C. Howell, and W. Rainey, 1976. "Marine Environments of the Virgin Islands." Virgin Islands Planning Office. Technical Supplement No. 1.

Towle, E.L. and A.R. Teytaud, 1982. "Caribbean island resource management: an annotated bibliography – U.S. man and the biosphere program." St. Thomas, VI: Island Resources Foundation.

Tucker, R.E., 1987. "A geochemical study of St. John, U.S. Virgin Islands." Colorado School of Mines. Ph.D. thesis for a degree in geochemistry.

Tyson, G.F., 1983. *Register of Virgin Islands Shipwrecks 1593-1917*. Island Resources Foundation, St. Thomas.

Tyson, G.F., 1984. *A History of Land on St. John, 1718-1950 (Preliminary report)*, George F. Tyson. Virgin Islands National Park.

van't Hof, T., 1985. "The economic benefits of marine parks and protected areas in the Caribbean region." *Proc. 5th Int. Coral Reef Sym*, Tahiti, 6:551-556.

Vicente, V.P., R.H. Boulon and T. Tallevast, 1995. "Characteristics of Green turtle (*Chelonia mydas*) grazing grounds in some Caribbean islands." Twelfth Annual Symposium on Sea Turtle Biology and Conservation, 1992. NOAA Tech. Memo NMFS-SEFSC-361: 145-149.

Virgin Islands National Park, 1987. "Virgin Islands National Park shoreline management plan." Res. Mgt. Div., V.I. Nat. Park, St. Thomas, VI.

Warmke, G.L. and RT Abbott, 1962. *Caribbean Seashells. A guide to the marine mollusks of Puerto Rico and other West Indian Islands, Bermuda and the Lower Florida Keys*. Livingston Publishing Company, Narberth, Pennsylvania.

Warner, R., and M. Barnes, 1975. "A population and behavioral study of the sea anemone, *Stoichadis helianthes*." Proj. paper, Gustavus Adolphus College, St. Peter, MN.

Weil, E. and R. Laughlin, 1984. "Biology, population dynamics, and reproduction of the queen conch, *Strombus gigas* L., in the Archipelago de Los Roques National Park." *J. Shellfish Res.* 4:45-62.

Water Resources Division, 1995. "Baseline Water Quality Data Inventory and Analysis, Virgin Islands National Park." National Park Service, Water Resources Division, Fort Collins, Colorado. plus appendices and diskettes.

- Weinberg, J., 1987. "Population and distribution study of *Tripneustes ventricosus* in Greater Lameshur Bay, St. John, U.S.V.I." School for Field Studies Student Research Reports Caribbean Program.
- Wicklund, R.I., L.J. Hepp, and G.A. Wenz, 1988. "Preliminary studies on the early life history of the queen conch, *Strombus gigas*, in the Exuma Cays, Bahamas." NURP Res. Rept. 88-4:347-363.
- Williams, S.L., 1988. "*Thalassia testudinum* productivity and grazing by green turtles in a highly disturbed seagrass bed." *Marine Biology* 98:447-455.
- Williams, S.L., 1988. "Assessment of anchor damage and carrying capacity of seagrass beds in Francis and Maho Bays for Green sea turtles." Biosphere Reserve Research Report No. 25. National Park Service.
- Williams, S.L., 1990. "Experimental studies of Caribbean seagrass bed development." *Ecological Monographs* 60:449-469.
- Wolff, N., 1996. "The fish assemblages within four habitats found in the nearshore waters of St. John, United States Virgin Islands: with some insights into the nature of trap fishing." Master's Thesis. University of Rhode Island. 207 pp.
- Wolff, N., 1998. "Spiny lobster evaluation within Virgin Islands National Park (summer of 1996)." Report to USGS, BRD.
- Wolff, N., R. Grober-Dunsmore, C.S. Rogers, and J. Beets, 1999. "Management implications of fish trap effectiveness in adjacent coral reef and gorgonian habitats." *Environ. Biol. Fishes* 55:81-90.
- Wood, R., 1986. "U.S. Virgin Islands pelagic fisheries development project." NOAA/NMFS Saltonstall-Kennedy Act Grant # NA-84-WC-H-06146.
- Wood, R.S. and D.A. Olsen, 1983. "Application of biological knowledge to the management of the Virgin Islands conch fishery." *Proc. Gulf and Carib. Fish Inst.* 35:112-121.
- Young, K., 1982. "Algal preference of herbivorous reef fishes of Lameshur Bay, St. John." USVI. Proj. paper, Gustavus Adolphus College, St. Peter, MN.



THE SECRETARY OF THE INTERIOR
WASHINGTON



434465

Memorandum to the President

Date: December 21, 2000

From: Secretary Babbitt

Discussion of the Buck Island Reef National Monument Expansion Proposal and Modification

Attached is a draft proclamation, with an accompanying map,¹ to enlarge the Buck Island Reef National Monument in the U.S. Virgin Islands. This memorandum describes: (a) the basis for my recommendation that you enlarge the Buck Island Reef National Monument; (b) the draft proclamation; and (c) the resources, ownership patterns, and management issues present in the area. After careful review of the record, I am convinced that the scientific and historic objects satisfy the criteria for establishing a national monument pursuant to the Antiquities Act, and that the boundaries of the land reserved represent the smallest area compatible with the proper care and management of those objects.

THE ANTIQUITIES ACT

Section 2 of the Antiquities Act, 16 U.S.C. 431, authorizes the President to establish as national monuments "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States...."

The proposed expansion includes submerged lands off of St. Croix, within the 3-mile belt of the Virgin Island Territory. These lands are not "owned" as that concept is generally understood, but rather the United States exercises paramount rights over the submerged lands, which makes them "controlled" by the United States as that term is used in the Antiquities Act. The September 15, 2000 legal opinion of the Assistant Attorney General, Office of Legal Counsel, "Administration of Coral Reef Resources in the Northwest Hawaiian Islands," concludes that the United States exercises sufficient control over submerged land within the territorial waters of the United States to invoke the Antiquities Act.

¹ The boundaries of the proposed monument expansion are drawn on the map entitled "Buck Island Reef National Monument Expansion," which would be attached to, and made a part of, your proclamation. It is not practicable, as of this date, to describe the boundaries of the land reserved as a part of the proposed monument either by metes and bounds or by reference to designated subdivisions on official surveys shown on publicly recorded plats or maps. The Minerals Management Service's Mapping Division in cooperation with the National Park Service will produce a description as soon as practicable should you decide to proceed.

Memorandum to the President

Date:

From: Secretary Babbitt

Discussion of the Buck Island Reef National Monument Expansion Proposal and Modification

Attached is a draft proclamation, with an accompanying map,¹ to enlarge the Buck Island Reef National Monument in the U.S. Virgin Islands. This memorandum describes: (a) the basis for my recommendation that you enlarge the Buck Island Reef National Monument; (b) the draft proclamation; and (c) the resources, ownership patterns, and management issues present in the area. After careful review of the record, I am convinced that the scientific and historic objects satisfy the criteria for establishing a national monument pursuant to the Antiquities Act, and that the boundaries of the land reserved represent the smallest area compatible with the proper care and management of those objects.

THE ANTIQUITIES ACT

Section 2 of the Antiquities Act, 16 U.S.C. 431, authorizes the President to establish as national monuments "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States...."

The proposed expansion includes submerged lands off of St. Croix, within the 3-mile belt of the Virgin Island Territory. These lands are not "owned" as that concept is generally understood, but rather the United States exercises paramount rights over the submerged lands, which makes them "controlled" by the United States as that term is used in the Antiquities Act. The September 15, 2000 legal opinion of the Assistant Attorney General, Office of Legal Counsel, "Administration of Coral Reef Resources in the Northwest Hawaiian Islands," concludes that the United States exercises sufficient control over submerged land within the territorial waters of the United States to invoke the Antiquities Act.

¹ The boundaries of the proposed monument expansion are drawn on the map entitled "Buck Island Reef National Monument Expansion," which would be attached to, and made a part of, your proclamation. It is not practicable, as of this date, to describe the boundaries of the land reserved as a part of the proposed monument either by metes and bounds or by reference to designated subdivisions on official surveys shown on publicly recorded plats or maps. The Minerals Management Service's Mapping Division in cooperation with the National Park Service will produce a description as soon as practicable should you decide to proceed.

Within this 3-mile belt the Territorial Submerged Lands Act of 1974 (TSLA), 48 U.S.C. § 1705, transferred certain federal interests to the Virgin Island Government, but specifically retained in the United States all its interests in “all submerged lands adjacent to property owned by the United States above the line of mean high tide.” This retained area has now been delineated by a Departmental survey completed this year (see 65 Fed. Reg. 68157 (2000)). Only those federally retained submerged lands – excluded from transfer to the Virgin Island Territory under the terms of the TSLA – are included in the proposed expansion.

A. Objects of Historic or Scientific Interest

The proposed Buck Island Reef National Monument is located off the northeast coast of St. Croix in the U.S. Virgin Islands. All of the lands reserved under the proposal are submerged lands that surround the existing Buck Island Reef National Monument. Elevations within the proposed monument dip to 50 fathoms (300 feet) below sea level. The map appended to the draft proclamation sets out the boundaries of the land that would be reserved in the monument. The outer boundaries of the area encompass approximately 18,135 marine acres owned by the federal government. The draft proclamation attached to this memo describes objects in the area that warrant protection as a monument. Attachment A is a bibliography of the principal sources of information relied upon in making this recommendation.

Buck Island Reef National Monument was established on December 28, 1961 (Presidential Proclamation 3443) just north of St. Croix in the U.S. Virgin Islands. The 1961 Proclamation describes Buck Island and its “adjoining shoals, rocks, and undersea coral reef formations” as “one of the finest marine gardens in the Caribbean Sea,” which are of “great scientific interest and educational value to students of the sea and to the public.” The Proclamation also warned that the “unique natural area and the rare marine life which are dependent upon it are subject to constant threat of commercial exploitation and destruction.”

Considered one of the finest marine gardens in the Caribbean Sea, the unique natural area and the rare marine life which are dependent upon it are subject to constant threat of commercial exploitation and destruction. Its vulnerable floral and faunal communities live in a fragile, interdependent relationship and include habitats essential for sustaining the tropical marine ecosystem: coral reefs, sea grass beds, octocoral hardbottom, sand communities, algal plains, shelf edge, and oceanic habitats. The boundary enlargement effected by this proclamation brings into the monument additional objects of scientific and historic interest, and provides necessary further protection for the resources of the existing monument.

The expansion area includes additional coral reefs (patch, spur and groove, and deep and wall), unusual “haystacks” of elkhorn coral, barrier reefs, sea grass beds, and sand communities, as well as algal plains, shelf edge, and other supporting habitats not included within the initial boundary. Oceanic currents carry planktonic larvae of coral reef-associated animals to the shallow nearshore coral reef and sea grass habitats, where they transform into their juvenile stage. As they mature over months or years, they move offshore and take up residence in the deeper coral reefs,

octocoral hardbottom, and algal plains. Between the proposed monument's nearshore habitats and its shelf edge spawning sites are habitats that play essential roles during specific developmental stages of many reef-associated species, including spawning migrations of many reef fish species and crustaceans. Several threatened and endangered species forage, breed, nest, rest, or calve in the waters included in the enlarged monument, including humpback whales, pilot whales, four species of dolphins, brown pelicans, least terns, and the hawksbill, leatherback, and green sea turtles. Countless species of reef fishes, invertebrates, plants, and over 12 species of sea birds utilize this area.

The ecologically important shelf edge is the spawning site for many reef species, such as most groupers and snappers, and the spiny lobster. Plummeting to abyssal depths, this habitat of vertical walls, honeycombed with holes and caves, is home to deepwater species and a refuge for other species.

The expansion area also contains significant cultural and historical objects. In March 1797, the slave ship *Mary* captained by James Hunter of Liverpool sank in this area and its cargo of 240 slaves saved and brought to Christiansted. In March 1803, the *General Abercrombie* captained by James Booth of Liverpool also wrecked in this area and its cargo of 339 slaves was brought to Christiansted. The presence of slave shipwrecks in U.S. waters is rare. The proposed expansion area contains remnants of these wrecks, and other wrecks may also exist in the monument.

B. Land Area Reserved for the Proper Care and Management of the Objects to be Preserved

The Antiquities Act authorizes the President, as part of his declaration of a national monument, to reserve land, "the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected...." 16 U.S.C. § 431. The area proposed for reservation has been carefully delineated, based on review of available information, to meet the goals of properly caring for and managing the objects in perpetuity.

The area includes the biological and geological objects identified in the draft proclamation and Attachment A accompanying this memorandum. The area of the proposed monument expansion is based on the conservation needs of the objects to be protected. The biological resources are present throughout the entire proposed monument area, and the geological resources are inextricably tied to sustaining and enhancing the biological resources in this tropical marine ecosystem. These objects depend for their scientific value on their location at various sites or submerged elevations.

The 1961 Proclamation identified the barrier reef as a unique feature to be preserved. At that time, knowledge of the coral reef ecosystem was limited. There was incomplete understanding of how interactive the reef and its inhabitants are with the surrounding waters, sea grass beds, and patch reefs, among other components of the ecosystem. Many species of reef fish, lobster, conch, and sea turtles move freely between the lagoon and barrier reefs which are inside the

existing monument, and the surrounding coral reef ecosystem, which is not. These sea creatures do not recognize political boundaries, and the "no take" area that was established in the existing monument has not afforded them adequate protection. Reef fish of all kinds take refuge in the reef structure during the day, but at sunset migrate off the reef into the sea grass beds to feed. Conchs protected in the shallow lagoonal sea grass patches in the existing monument move out into the deeper grass beds outside the existing monument seasonally, where they are harvested. Lobsters hide under ledges along the barrier reef by day and move off the reef to scavenge for food at night. Sea turtles, primarily the endangered hawksbill turtle, forage and sleep in the reef structure but move throughout the barrier reef complex. Inhabitants of the barrier reef and the reef itself need the surrounding habitats to survive.

Surrounding the protected barrier reef is a complex of interrelated habitats, including elkhorn coral patch reefs and spur and groove formations. Each of these provides essential components to the main reef. Over the last 20 years the barrier reef, made up of primarily elkhorn coral, has been impacted by several diseases. White Band Disease, Black Band Disease and, more recently, bleaching events have all taken a toll on the health of the reef. Live coral cover has been reduced from 85 % in the early 1970s to less than 5 % in 2000. There has been little sign of recovery until recently. Areas surveyed inside the expansion lands include some healthy elkhorn coral patch reefs that may be contributing to the new recruits seen in the park on the barrier reef. Additionally, the spur and groove reef system to the west of the park hosts numerous juvenile fish, which will recruit into the reef when they get larger. The health of the expansion lands provides some hope that, given proper protection, they will support the recovery of the barrier reef.

Preservation of such objects requires, among other things, protection of enough land to maintain the conditions that have made their continued existence possible. The scientific value of many of the objects within the proposed monument expansion requires preservation of areas large enough to maintain the objects and their interactions. Degradation of the tropical marine ecosystem around the monument puts the objects in peril; a smaller expansion area may not reverse the degradation of the ecosystem. Many of the biological objects in the area result from the extraordinary geology and blending of ecosystems, which provides habitat for a high diversity of species. The proposed monument expansion also provides an important link for migration and dispersal of species among habitats in the Caribbean. Many species must range within and through the area to maintain viable populations and their role in the ecosystem. Thus, protection of the aggregate area is necessary for proper care of the objects. Management of a patchwork of reserved lands would be impractical, as it would make it more difficult to care for the objects, reduce options for natural resource management, and lead to inconsistent resource management standards for overlapping resources. For these reasons, the reservation of a smaller area would undermine proper care and management of the objects to be protected by this proposed monument expansion.

LEGAL EFFECTS OF THE PROCLAMATION

There are several significant aspects of the draft proclamation. First, it would reserve only lands owned or controlled by the United States in the area, because the Antiquities Act applies only to objects of historic or scientific interest "that are situated upon the lands owned or controlled by the Government of the United States." 16 U.S.C. § 431.

Second, the draft proclamation would be subject to valid existing rights, if any. Thus, to the extent a person or entity has valid existing rights in the federal lands or resources within the area, the draft proclamation would respect their rights. The exercise of such rights could, however, be regulated in order to protect the purposes of the proposed expansion.

Third, the submerged lands in the proposed monument expansion are generally not subject to the public lands and mining laws of the United States; nevertheless, to provide clear public notice of this fact, the draft proclamation appropriates and withdraws the federal lands and interests in lands owned or controlled by the United States within the boundaries of the proposed monument from entry, location, sale, leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws and from disposition under all laws relating to mineral and geothermal leasing. This withdrawal prevents the Secretary of the Interior from exercising discretion under the mineral leasing acts and related laws to lease or sell federal minerals within the boundaries of the proposed monument expansion.

Fourth, the draft proclamation would prohibit boat anchoring inside the entire national monument, although the Secretary is authorized to permit limited exceptions for emergency or authorized administrative purposes, and is also authorized to issue permits for anchoring in deep sand bottom areas, but only to the extent that such anchoring is consistent with the protection of the objects identified in the draft proclamation.

Fifth, the draft proclamation would prohibit all extractive uses, such as fishing, throughout the entire monument. This prohibition supersedes the limited authorization for extractive uses included in the Proclamation of December 28, 1961 (Presidential Proclamation 3443).

Sixth, the draft proclamation directs the Secretary to develop a management plan, including vessel management planning, that addresses any actions necessary to protect the objects identified in the draft proclamation.

ADMINISTRATION OF THE MONUMENT

A. Management by the National Park Service (NPS)

The federal lands in the area described in the attached draft proclamation are currently not assigned to any bureau. I believe the area is best managed by the NPS. The attached draft proclamation would, consistent with the provisions of Reorganization Plan No. 3 of 1950, have

the Secretary of the Interior manage the proposed monument through the NPS under its existing authorities, but subject to the overriding purpose of protecting the objects described in the draft proclamation.

B. Impact of Monument Designation on Existing or Planned Activities in the Area

1. Currently allowed uses

Recreational and commercial use restrictions and other similar use restrictions would generally not be affected except where further limitations on these uses are required by the NPS: (1) through processes required by existing law, the NPS identifies places where such uses ought to be restricted or prohibited as necessary to protect the federal lands and resources, including the objects protected by the monument designation; or (2) the NPS finds a clear threat from such a use to the federal lands and resources, including the objects protected by the proposed monument designation, and the circumstances call for swift protective action. Recreational and commercial uses would, of course, remain subject to applicable laws and regulations, and would therefore remain subject to regulation and limitation under such provisions for reasons other than expansion of the proposed monument.

Because they directly contribute to the destruction of the objects listed in the draft proclamation, recreational and commercial boat anchoring would be prohibited in the proposed monument, except for (1) emergency or authorized administrative uses; or (2) in deep sand bottom areas, where the NPS may permit carefully limited anchoring. Where consistent with the protection of the objects listed in the draft proclamation, the NPS may install boat moorings in the proposed monument to facilitate appropriate use of the area.

2. Currently allowed fishing and other extractive uses

As noted earlier, the principal purpose of the 1961 designation was to protect Buck Island and its adjoining shoals, rocks, and undersea coral reef formations, considered one of the finest marine gardens in the Caribbean Sea. Given increases in development, visitation, and fishing uses in the last four decades, this purpose can only be advanced by enlarging the area and prohibiting all extractive uses in it.

The management approach adopted by the NPS in 1962 for the newly created monument included a “no-take” area experiment, which closed some of the monument to all forms of collecting, and left a portion open for the existing fishery. The “existing” way of fishing identified in the 1961 proclamation no longer exists in the area. Then fishing was conducted by small boats using hand lines, nets, and setting a few traps; now it is conducted with large boats using cheap, durable, and frequently lost fish traps. These “ghost traps” indiscriminately catch and kill fish. Given emergent scientific understanding of how removing fish from the coral reef ecosystem adversely impacts the scientific objects described above, the draft proclamation includes a “no-take” provision for fishing and other extractive uses in both the existing

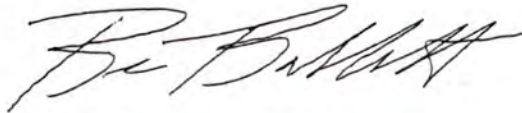
monument and the expansion lands. This action will allow the Virgin Islands to meet its year 2002 goal established in the U.S. Coral Reef Task Force's "National Action Plan for Coral Reef Conservation," of "no-take" zones in no less than 5% of the territorial waters. The "no-take" zone also helps accomplish the objectives set out in Executive Order 13089 on management of coral reefs.

3. Mineral activities

The area has no known potential for oil and gas development, and there are no existing mineral leases. New mineral leases or mineral sales would be prohibited as the draft proclamation withdraws the area from all applicable mineral leasing, development, and related laws.

CONCLUSION

Enlarging the Buck Island Reef National Monument would be an exemplary exercise of Presidential authority under the Antiquities Act, well in keeping with past practice through which many notable objects of historic and scientific interest have been preserved, to the Nation's great and lasting benefit. I strongly recommend you sign the proclamation.

A handwritten signature in black ink, appearing to read "Bruce Babbitt", written in a cursive style.

The Secretary of the Interior

DRAFT

Presidential Proclamation #####

Boundary Enlargement and Modification of the Buck Island Reef National Monument

By the President of The United States of America

A PROCLAMATION

Buck Island Reef National Monument was established on December 28, 1961 (Presidential Proclamation 3443), just north of St. Croix in the U.S. Virgin Islands, for the purpose of protecting Buck Island and its adjoining shoals, rocks, and undersea coral reef formations. Considered one of the finest marine gardens in the Caribbean Sea, the unique natural area and the rare marine life which are dependent upon it are subject to constant threat of commercial exploitation and destruction. Its vulnerable floral and faunal communities live in a fragile, interdependent relationship and include habitats essential for sustaining the tropical marine ecosystem: coral reefs, sea grass beds, octocoral hardbottom, sand communities, algal plains, shelf edge, and oceanic habitats. The boundary enlargement effected by this proclamation brings into the monument additional objects of scientific and historic interest, and provides necessary further protection for the resources of the existing monument.

The expansion area includes additional coral reefs (patch, spur and groove, and deep and wall), unusual "haystacks" of elkhorn coral, barrier reefs, sea grass beds, and sand communities, as well as algal plains, shelf edge, and other supporting habitats not included within the initial boundary. Oceanic currents carry planktonic larvae of coral reef-associated animals to the shallow nearshore coral reef and sea grass habitats, where they transform into their juvenile stage. As they mature over months or years, they move offshore and take up residence in the deeper coral reefs, octocoral hardbottom, and algal plains. Between the monument's nearshore habitats and its shelf edge spawning sites are habitats that play essential roles during specific developmental stages of many reef-associated species, including spawning migrations of many reef fish species and crustaceans. Several threatened and endangered species forage, breed, nest, rest, or calve in the waters included in the enlarged monument, including humpback whales, pilot whales, four species of dolphins, brown pelicans, least terns, and the hawksbill, leatherback, and green sea turtles. Countless species of reef fishes, invertebrates, plants, and over 12 species of sea birds utilize this area.

The ecologically important shelf edge is the spawning site for many reef species, such as most groupers and snappers, and the spiny lobster. Plummeting to abyssal depths, this habitat of vertical walls, honeycombed with holes and caves, is home to deepwater species and a refuge for other species.

The expansion area also contains significant cultural and historical objects. In March 1797, the slave ship Mary captained by James Hunter of Liverpool sank in this area and its cargo of 240 slaves saved and brought to Christiansted. In March 1803, the General Abercrombie captained by James Booth of Liverpool also wrecked in this area and its cargo of 339 slaves was brought to Christiansted. Slave shipwrecks in U.S. waters are rare. The monument contains remnants of these wrecks. Other wrecks may also exist in the monument.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431) authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

WHEREAS it appears that it would be in the public interest to reserve such lands as an addition to the Buck Island Reef National Monument:

NOW, THEREFORE, I, William J. Clinton, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), do proclaim that there are hereby set apart and reserved as an addition to the Buck Island Reef National Monument, for the purpose of care, management, and protection of the objects of scientific interest situated on lands within the said monument, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Buck Island Reef National Monument Boundary Enlargement" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 18,135 marine acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument.

For the purpose of protecting the objects identified above, the Secretary shall prohibit all boat anchoring, provided that the Secretary may permit exceptions for emergency or authorized administrative purposes, and may issue permits for anchoring in deep sand bottom areas, to the extent that it is consistent with the protection of the objects.

For the purposes of protecting the objects identified above, the Secretary shall prohibit all extractive uses. This prohibition supersedes the limited authorization for extractive uses included in Proclamation 3443 of December 28, 1961.

Lands and interests in lands within the monument not owned or controlled by the United States shall be reserved as a part of the monument upon acquisition of title or control thereto by the United States.

The Secretary of the Interior shall manage the monument through the National Park Service, pursuant to applicable legal authorities, to implement the purposes of this proclamation.

The Secretary of the Interior shall prepare a management plan, including the management of vessels in the monument, within two years that will address any further specific actions necessary to protect the objects identified above.

The enlargement of this monument is subject to valid existing rights.

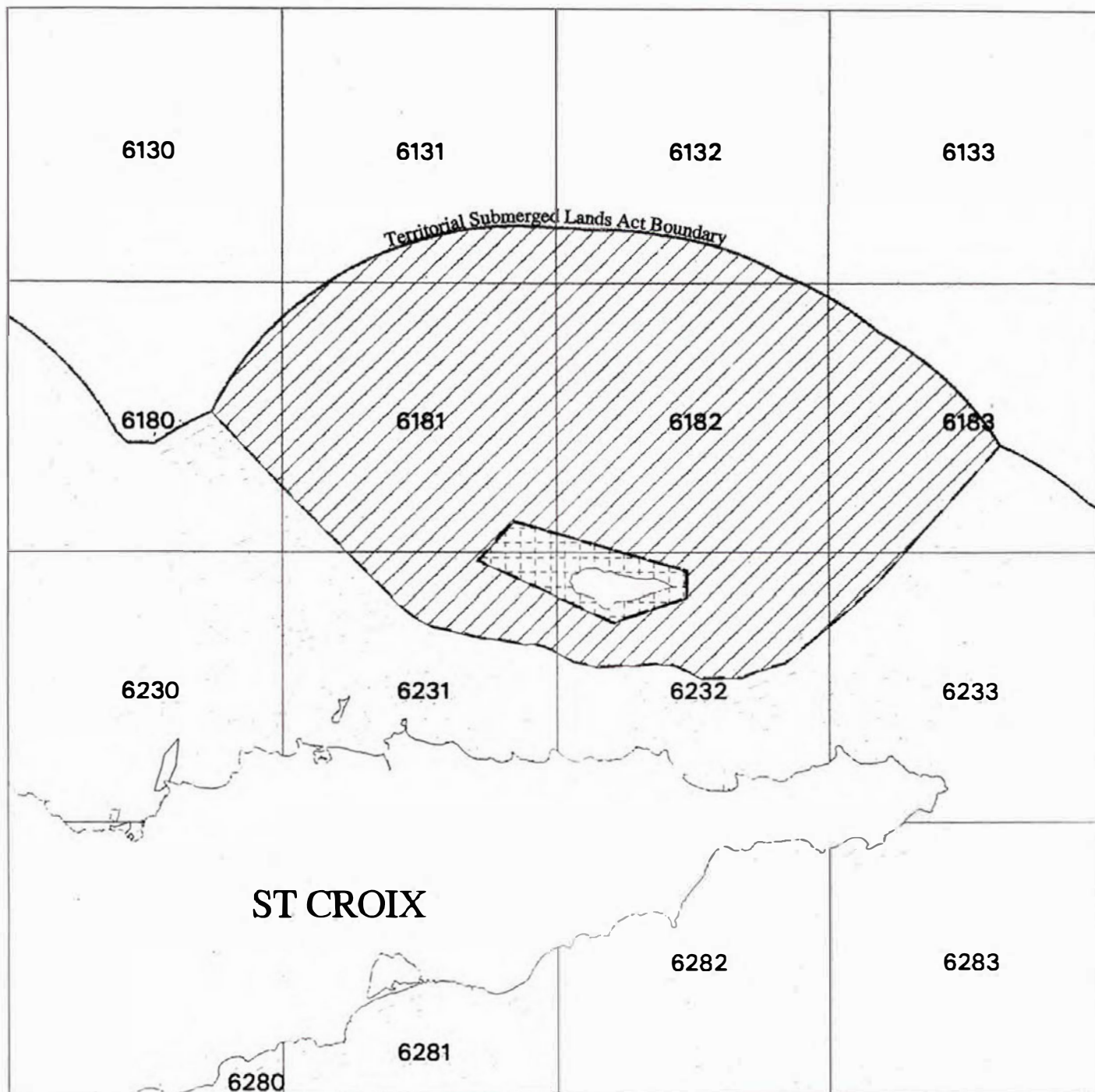
Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this xxxxx day of xxxxx, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fifth.

William J. Clinton

Proposed Buck Island Reef National Monument Expansion



-  V.I. Territorial Submerged Lands
 Federal Submerged Lands
-  Existing National Monument
 Proposed National Monument Expansion
- 

Bibliography
Proposed Buck Island Reef National Monument Expansion

Abbott, D., J. Ogden, and I. Abbot, 1974. "Studies on the activity pattern, behavior and food of the echinoid *Echinometra lucunter* on beachrock and algal reefs at St. Croix, USVI." West Indies Laboratory Special Publication.

Adams, J.B., L.C. Gerhard, J.C. Ogden and J. Bowman, 1975. "Potential National Natural Landmarks U.S. Virgin Islands." West Indies Laboratory Farleigh Dickinson University, St. Croix, VI.

Adey, W.H., 1975. "The algal ridges and coral reefs of St. Croix: Their structure and Holocene development." *Atoll Res. Bull.* No. 187.

Adey, W.H. and R. Burke, 1976. "Holocene bioherms (algal ridges and bank-barrier reefs) of the eastern Caribbean." *Geological Society of America Bulletin.* 87:95-109.

Adey, W.H., W. Gladfelter, J. Ogden and R. Dill, 1977. "Field guidebook to the reefs and reef communities of St. Croix, Virgin Islands." *Proc. 3rd Int. Sym. Coral Reefs.* The Atlantic Reef Committee, University of Miami. Miami Beach, FL.

Albright, A.B., 1975. "Proton Magnetometer survey of marine archeology sites in the Virgin Islands." Caribbean Research Institute, St. Thomas, USVI, pp. 14.

Anderson, M., H. Lund, E. Gladfelter, and M. Davis, 1986. Ecological community type maps and biological community descriptions for Buck Island Reef National Monument and proposed marine sites in the British Virgin Islands. Virgin Islands Resource Management Cooperative: *Biosphere Reserve Research Report No. 4.*

Appeldoorn, R.S., 1992. "Preliminary calculations of sustainable yields for queen conch (*Strombus gigas*) in Puerto Rico and the U.S. Virgin Islands." *Proc. Gulf Carib. Fish. Inst.* 41:95-105.

Appeldoorn, R., J. Beets, J. Bohnsack, S. Bolden, D. Matos, S. Meyers, A. Rosario, Y. Sadovy, and W. Tobias, 1992. "Shallow water reef fish stock assessment for the U.S. Caribbean." NOAA Technical Memorandum NMFS-SEFSC-304.

Armstrong, R., 1983. Marine environments of Puerto Rico and the Virgin Islands: automated mapping and inventory using Landsat data. Caribbean Fishery Management Council, NOAA/NMFS.

Bak, R.P.M. and M.S. Engel, 1979. "Distribution, abundance and survival of juvenile hermatypic corals (Scleractinia) and the importance of life history strategies in the parent coral community." *Mar. Biol.* 54:341-352.

- Bandler, B. (Ed), 1974. "Our troubled environment – can we save it?" *Proc. Conf. on the VI Environment*. College of the Virgin Islands.
- Basford, S.S., R.L. Brandner and R.H. Boulon, 1986; 1987; 1988; 1989 and 1990. "Tagging and nesting research of leatherback sea turtles [*Dermochelys coriacea*] on Sandy Point, St. Croix, USVI." Technical Reports , USFWS, DOI. 29; 30; 32; 31; and 31 pp.
- Bayer, F.M., 1968. "A review of research and exploration in the Caribbean Sea and adjacent waters." Scientific Contribution from the Institute of Marine Sciences, University of Miami.
- Beets, J., 1993. "Assessment of shallow-water fisheries resources within Virgin Islands National Park and Buck Island Reef National Monument: Annual Report - FY 1992-93."
- Beets, J., 1996. "The effects of fishing and fish traps on fish assemblages within Virgin Islands National Park and Buck Island Reef National Monument." A technical report to the NPS.
- Beets, J., 1997. "Can coral reef fish assemblages be sustained as fishing intensity increases?" *Proc. 8th Int. Coral Reef Sym.* 2:2009-2014.
- Beets, J. and A. Friedlander, 1992. "Stock analysis and management strategies for red hind, *Epinephelus guttatus*, in the U.S. Virgin Islands." *Proc. Gulf Carib. Fish. Inst.* 42:66-79.
- Beets, J. and A. Friedlander, 1999. "Evaluation of a conservation strategy: a spawning aggregation closure for red hind, *Epinephelus guttatus*, in the U.S. Virgin Islands." *Environ. Biol. Fish.* 55:91-98.
- Beets, J., A. Friedlander and T. Tobias, 1994. "Stock analysis of coney, *Epinephelus fulvus*, in St. Croix, U.S. Virgin Islands." *Proc. Gulf Carib. Fish. Inst.* 43:403-416.
- Bell, J.D. and R. Galzin, 1984. "Influence of live coral cover on coral reef communities." *Marine Ecology Program Service*, 15:265-274.
- Benninger, L.K. and R.E. Dodge, 1986. "Fallout Plutonium and natural radionuclides in annual bands of the coral *Montastraea annularis*, St. Croix, USVI." *Geochimica Et Cosmochimica Acta* 50:2785-2795.
- Berkes, F., 1985. "Fishermen and "The Tragedy of the Commons". *Environ. Cons.* 12:199-206.
- Birkeland, C., 1990. "Caribbean and Pacific coastal marine systems: Similarities and differences." UNESCO publication *Nature and Resources*. 26(2).
- Birkeland, C. and S. Neudecker, 1981. "Foraging behavior for two Caribbean chaetodontids: *Chaetodon capistratus* and *C. aculeatus*." *Copeia* 1981: 169-178.

- Bock, W., 1969. "Report on the ecology of the benthic foraminifera in St. Croix." West Indies Laboratory, St. Croix, VI, Special Project No. 2.
- Bohnsack, J.A., 1982. "Effects of piscivorous predator removal on coral reef fish community structure." *Gutshop '81: Fish and Food Habits Studies*. Seattle, WA, Washington Sea Grant Program; 1982:258-267.
- Bohnsack, J.A., 1996. "Maintenance and recovery of reef fish productivity." In (Polunin, N.V.C. and Roberts, C.M., editors.) *Reef Fisheries*. Chapman and Hall. Chapter 11.
- Bohnsack, J.A., 1998. "Application of marine reserves to reef fisheries management." *Aust. J. Ecol.* 23:298-304.
- Bohnsack, J.A., 1998. "Marine reserves: lessons from Florida." *Proc. West Coast Rockfish: a Workshop*: 89-99.
- Bohnsack, J.A., 1999. "Incorporating no-take marine reserves into precautionary management and stock assessment." NOAA Technical Memorandum, Stock Assessment Workshop.
- Bohnsack, J. and J. Ault, 1996. "Management strategies to conserve marine biodiversity." *Oceanography* 9:73-82.
- Bohnsack, J.A., D.L. Sutherland, A. Brown, D.E. Harper and D.B. McClellan, 1986. "An analysis of the Caribbean biostatistical database for 1985." Miami Lab., S.E. Fish Ctr., NMFS, Coastal Res. Div. Contr. No. 86/87-10, Miami.
- Boulon, R.H., 1990. "Leatherback turtle (*Dermochelys coriacea*) nesting biology, Sandy Point, St. Croix, USVI: 1981-1990." *Proc 11th Ann. Sym. Sea Turtle Biol. and Cons.* NOAA Tech. Memo NMFS-SEFSC-302: 14 - 16.
- Boulon, R.H., 1992. *Recovery Plan for Leatherback Turtles in the U.S. Caribbean, Atlantic and Gulf of Mexico*. NMFS, Wash., D.C.
- Boulon, R.H., 1993. "Nesting Biology of a leatherback turtle, *Dermochelys coriacea*, on Sandy Point, St. Croix, USVI: 1979 to 1992." *Proc 13th Ann. Sym. Sea Turtle Biol. and Cons.* NOAA Tech. Memo NMFS-SEFSC-341: 25 - 27.
- Boulon, R.H., 1993. *Recovery Plan for Hawksbill Turtles in the U.S. Caribbean Sea, Atlantic Ocean, and Gulf of Mexico*. NMFS, St. Petersburg, FL.
- Boulon, R.H., 1994. "Growth rates of wild juvenile Hawksbill turtles, *Eretmochelys imbricata*, in St. Thomas, U.S. Virgin Islands." *Copeia*, 1994(3): 811 - 814.

Boulon, R.H., and P.H. Dutton, 1996. "Leatherback turtle (*Dermochelys coriacea*) nesting biology, Sandy Point, St. Croix: 1981-1995".

Boulon, R.H., P.H. Dutton, and D.L. McDonald, 1996. "Leatherback turtles (*Dermochelys coriacea*) on St. Croix, U.S. Virgin Islands: Fifteen years of conservation." *Chelonian Conservation and Biology*. 2(2): 141-147.

Boulon, R.H., K.L. Eckert and S.A. Eckert, 1988. "*Dermochelys coriacea* (leatherback sea turtle) migration." *Herp. Rev.*, 19(4):88.

Boulon, R.H. and N.B. Frazer, 1990. "Growth of wild juvenile Caribbean green turtles, *Chelonia mydas*." *J. Herp.* 24(4):441-445.

Boulon, R.H., D. L. McDonald, and P. H. Dutton, 1994. "Leatherback turtle (*Dermochelys coriacea*) nesting biology, Sandy Point, St. Croix, U.S.V.I.: 1981 to 1993." *Proc 14th Ann. Sym. Sea Turtle Biol. and Cons.* NOAA Tech. Memo NMFS-SEFSC--351:190-193.

Boulon, R.H., R.L. Norton and T.A. Agardy, 1982. "Status of the brown pelican (*Pelecanus occidentalis occ.*) in the USVI." Final Technical Report, USFWS, DOI.

Boulon, R.H. and D.A. Olsen., 1982. "Virgin Islands Turtle Resources: aerial census results 1979 - 1980." Final Technical Report to National Marine Fisheries Service, NOAA Contract Nos. NA-79-GA-A-00133 and NA-80-GA-A-00055.

Boulon, R. H., and D.A. Olsen, 1982. "Some notes on the population biology of Green (*Chelonia mydas*) and Hawksbill (*Eretmochelys imbricata*) turtles in the U.S. Virgin Islands." Final Technical Report, USFWS, DOI.

Brandon, M., 1985. "Marine recreational fisheries statistics of the U.S. Virgin Islands, January 1983 to September 1985." *Proc. Gulf and Carib. Fish. Inst.* 38:665-683.

Brewer, D.M., 1992. "An Archeological Overview and Assessment of Submerged Cultural Resources in Virgin Islands National Park (St. John and Hassel Islands), Buck Island Reef National Monument and Salt River National Historic Park and Ecological Preserve." A report for the NPS from the Southeast Archeology Center, NPS, Tallahassee, Florida.

Brownell, W.N. and J.M. Stevely, 1981. "The biology, fisheries, and management of the queen conch, *Strombus gigas*." *Mar. Fish. Rev.* 43(7).

Buckman, N.S. and J.C. Ogden, 1973. "Territorial behavior of the striped parrotfish *Scarus croicensis* Bloch (Scaridae)." *Ecology* 54:1377-1382.

Bythell, J.C. and M. Bythell, 1992. "Coral reef community structure assessment based on planar and three-dimensional area cover: A comparison of techniques." In *Ecological studies of Buck Island Reef National Monument, St. Croix, USVI: A quantitative assessment of selected components of the coral reef ecosystem and establishment of long-term monitoring sites. Part II.* Prepared for the National Park Service. Published by Island Resources Foundation and West Indies Laboratory.

Bythell, J.C., M. Bythell, and E.H. Gladfelter, 1993. "Initial results of a long-term coral reef monitoring program: impact of Hurricane Hugo at Buck Island Reef National Monument, St. Croix, US Virgin Islands." *J. Exp. Mar. Biol. and Ecol.* 172: 171-183.

Bythell, J.C., E.H. Gladfelter, and M. Bythell, 1992. "Chronic and catastrophic natural mortality of three common Caribbean corals." *Coral Reefs* 12: 143-152.

Bythell, J.C., E.H. Gladfelter, and M. Bythell, 1992. *Ecological studies of Buck Island Reef National Monument, St. Croix, USVI: A quantitative assessment of selected components of the coral reef ecosystem and establishment of long-term monitoring sites. Part II.* Prepared for the National Park Service. Published by Island Resources Foundation and West Indies Laboratory.

Bythell, J., E. Gladfelter, W. Gladfelter, K. French, and Z. Hillis, 1989. "Buck Island Reef National Monument – Changes in modern reef-community structure since 1976." In (D.K. Hubbard, ed.) *Terrestrial and Marine Geology of St. Croix, U.S. Virgin Islands.* West Indies Laboratory Special Publ. 8: 145-154.

Bythell, J.E., W. Gladfelter, and Z. Hillis, 1993. "Ecological studies of Buck Island Reef National Monument, St. Croix, US Virgin Islands: Report on February 1993 fixed transect surveys and post-Hurricane Hugo recovery of reef coral community composition." National Park Service.

Caribbean Research Institute, 1974. "Our troubled environment – can we save it?" *Proceedings of the Conference on the Virgin Islands Environment.* CRI, College of the Virgin Islands, St. Thomas, USVI.

Caribbean Fishery Management Council, 1980. Source document for the environmental impact statement/fishery management plan and regulatory analysis for the spiny lobster fishery of Puerto Rico and the US Virgin Islands.

Caribbean Fishery Management Council, 1981. "Environmental impact statement/fishery management plan and regulatory analysis for the spiny lobster fishery of Puerto Rico and the US Virgin Islands."

Caribbean Fishery Management Council, 1983. Draft. "Volume II Appendices to the draft fisheries management plan for the Puerto Rican and Virgin Islands geologic platforms."

Caribbean Fishery Management Council, 1984. "Draft fishery management plan, regulatory impact review, and environmental impact statement for the shallow-water reeffish fishery of Puerto Rico and the US Virgin Islands."

Caribbean Fishery Management Council, 1985. "Fishery Management Plan, Final Environmental Impact Statement, and Draft Regulatory Impact Review, for the Shallow-water Reeffish Fishery of Puerto Rico and the U.S. Virgin Islands."

Caribbean Fishery Management Council, 1994. Comments received during the comment period and at the public hearings for the draft fishery management plan, draft environmental impact statement, and draft regulatory impact review, for corals and reef associated plants and invertebrates for Puerto Rico and the United States Virgin Islands. NOAA/NMFS.

Caribbean Fishery Management Council, 1994. "Draft Fishery Management Plan, regulatory impact review, and final environmental impact statement for corals and reef associated plants and invertebrates of Puerto Rico and the United States Virgin Islands."

Caribbean Fishery Management Council, 1995. "Draft Fishery Management Plan/RIR/EIS for the queen conch resources of Puerto Rico and the USVI."

Caribbean Fishery Management Council, 1999. "Amendment Number 1 to the Fishery Management Plan for Corals and Reef Associated Plants and Invertebrates of Puerto Rico and the United States Virgin Islands for establishing a marine conservation district including regulatory impact review and initial regulatory flexibility analysis and a final supplemental environmental impact statement." NOAA/NMFS.

Carpenter, R.C., 1979. "The foraging strategy of *Diadema antillarum* (Philippi) Echinodermata: Echinoidea." M.S. Thesis: University of the Pacific.

Carpenter, R.C., 1981. "Grazing by *Diadema antillarum* (Philippi) and its effects on the benthic algal community." *J. Marine Research* 39: 749-765.

Carpenter, R.C., 1984. "Herbivores and herbivory on coral reefs: Effects on algal community biomass, structure, and productivity."

Carpenter, R.C., 1984. "Predator and population control of homing behavior in the Caribbean echinoid *Diadema antillarum*." *Marine Biology*. 82: 101-108.

Carpenter, R.C., 1990. "Mass mortality of *Diadema antillarum*. I. Long-term effects on sea urchin population dynamics and coral reef algal communities." *Marine Biology*. 104: 67-77.

Carpenter, R.C., 1990. "Mass mortality of *Diadema antillarum*. II. Effects on population densities and grazing intensities of parrotfishes and surgeonfishes." *Marine Biology*. 104: 79-86.

Cederstrom, D., n.d. Memorandum regarding the underground water supply of St. Croix and St. Thomas, Virgin Islands. U.S. Geological Survey Caribbean District open-file report. San Juan, PR.

Chornesky, E.A., 1989. "Repeated reversals during spatial competition between corals." *Ecology*.70: 843-855.

Clark, H.L., 1933. "A handbook of the littoral echinoderms of Porto Rico and the other West Indian Islands." In *Scientific Survey of Porto Rico and the Virgin Islands Volume XVI – Part I*.

Clark, J.R. (Ed.), 1985. *Coasts*. Coastal Publication No. 3, Renewable Resources Information Series.

Clavijo, I., 1984. "Fishery statistics of the Virgin Islands: 1978-1983." NMFS, NOAA 2-335-R.

Clavijo, T., J. Yntema, and J. Ogden, 1980. *An annotated list of the fishes of St. Croix, U.S. Virgin Islands (Second Edition)*. West Indies Laboratory, St. Croix.

Collazo, J.A. and E.E. Klaas, 1986. "Recovery plan for the brown pelican, *Pelicanus occidentalis occidentalis* in Puerto Rico and the US Virgin Islands."

Conservation Data Center (Univ. Virgin Islands) and NOAA, In preparation. Digitized aerial photographs and benthic habitat classification of the nearshore waters of the Virgin Islands.

Dahl, A.L., 1988. "Are human impacts through traditional or contemporary uses stabilizing or destabilizing to reef community structure?" *Proc. 6th Intl. Coral Reef Symp*: 63-69.

Dammann, A.E., 1969. Special Report. "Study of the Fisheries potential of the Virgin Islands." Virgin Islands Ecol. Res. Stn. Contr. 1, Virgin Islands.

Davidson, L. and K. Gjerde, n.d. "An evaluation of international protection offered to Caribbean coral reefs and associated ecosystems." Joint publication of Greenpeace International and the Marine Policy Center, Woods Hole Oceanographic Institution.

Davis, G.E., 1981. "On the role of underwater parks and sanctuaries in the management of coastal resources in the Southeastern United States." *Envir. Cons.* 8:67-70.

Davis, G.E., 1989. "Designated harvest refugia: the next stage of marine fishery management of coastal resources in the southeastern United States." *Envir. Cons.* 8:67-70.

Davis, G.E and J.W. Dodrill, 1989. "Recreational fishery and population dynamics of spiny lobsters, *Panulirus argus*, in Florida Bay, Everglades National Park, 1977-1980." *Bull. Mar. Sci.* 44(1):78-88.

Dixon, J.A., 1993. "Economic benefits of marine protected areas." *Oceanus* 36: 35-40.

- Dodge, R.E. and G.W. Brass, 1984. "Skeletal extension, density and calcification of the reef coral *Montastraea annularis*: St. Croix, US Virgin Islands." *Bulletin of Marine Science*. 34:288-307.
- Dong, M., 1973. "The role of man-induced stresses in the natural evolution of Long Reef and Christiansted Harbor, St. Croix, U.S. Virgin Islands." West Indies Laboratory, St. Croix, VI.
- Dugan, J.E. and G.E. Davis, 1993. "Applications of marine refugia to coastal fisheries management." *Can. J. Fish. Aquat. Sci.* 50:2029-2042.
- Dutton, P., D. McDonald and R.H. Boulon, 1992; 1994. "Tagging and nesting research of leatherback sea turtles (*Dermochelys coriacea*) on Sandy Point, St. Croix, USVI." Tech. Reports, USFWS, DOI.
- Dutton, P., D. McDonald and R.H. Boulon, 1992. "1991 a record year for leatherback productivity on St. Croix, U.S. Virgin Islands." *Marine Turtle Newsletter*, No. 57: 15-17.
- Eckert, S.A., K.L. Eckert and R.H. Boulon, 1982. "Tagging and nesting research of the leatherback sea turtle, *Dermochelys coriacea*, Sandy Pt., St. Croix, USVI." Tech. Report, USFWS, DOI.
- Erdman, D.S., 1968. "Spawning cycle, sex ratio and weight of blue marlin off Puerto Rico and the Virgin Islands." *Trans. Am. Fish. Soc.*, 97(2):131-137.
- Fenchel, T., 1990. "Studies on the decomposition of organic detritus derived from the turtle grass *Thalassia testudinum*." *Limn. and Ocean.* 15:14-20.
- Fiedler, R. H., and N. D. Jarvis, 1932. "Fisheries of the Virgin Islands of the United States." US Department of Commerce. *Bureau of Fisheries Investigational Report* No. 14. 1:1-32.
- Fonseca, M.S., 1987. "The management of seagrass systems." *Tropical Coastal Area Management*. August 1987. ICLARM. Metro Manila, Philippines.
- Friedlander, A.M., 1991. "Trends in the recreational billfish fishery in the U.S. Virgin Islands." ICCAT Working Document SCRS/90/85.
- Friedlander, A.M., 1995. "The recreational fishery for blue marlin, *Makaira nigricans* (Pisces: Istiophoridae), in the U.S. Virgin Islands." *Fisheries Research* 22: 163-173.
- Friedlander, A.M., R.S. Appeldoorn and J. Beets, 1994. "Spatial and temporal variations in stock abundance of queen conch, *Strombus gigas*, in the US Virgin Islands." In: R.S. Appeldoorn and B. Rodriguez (eds.), *Queen conch biology, fisheries, and mariculture*. Fundacion Cientifica Los Roques, Caracas, Venezuela.

Geis, A., T. Wibbels, B. Phillips, Z. Hillis-Starr, A. Meylan, C. Diez and R. van Dam, In press. "Use of Serum testosterone to evaluate the sex of juvenile Hawksbill Sea Turtles inhabiting Buck Island Reef National Monument (US Virgin Islands)." *Proc. 20th Sym. Sea Turtle Biol and Cons.*

Gill, I., and D. Hubbard, 1986. "Subsurface geology of the St. Croix carbonate rock system." *Water Res. Res. Cent.*, Tech. Report No. 26.

Gjerde, J.D. and R.M. Fujita, 1992. "Guidelines for national legislation to protect coral reef ecosystems." Prepared by Greenpeace, Environmental Solutions International, and Environmental Defense Fund. Washington, D.C.

Gladfelter, E.H., 1977. "Calcification and productivity in a dominant shallow water reef building coral, *Acropora palmate* (Lamarck)." M.S. Thesis: University of the Pacific.

Gladfelter, E.H., 1982. "Skeletal development in *Acropora cervicornis*: I. Patterns of calcium carbonate accretion in the axial corallite." *Coral Reefs* 1: 45-51.

Gladfelter, E.H., 1983. "Skeletal development and related aspects in the reef coral *Acropora cervicornis*." Ph.D. Dissertation: University of California, Los Angeles.

Gladfelter, E.H., 1984. "Skeletal development in *Acropora cervicornis*: II. A comparison of monthly rates of linear extension and calcium carbonate accretion measured over a year." *Coral Reefs* 3: 51-57.

Gladfelter, E.H., 1992. Annotated bibliography of marine research at Buck Island Reef National Monument, St. Croix, U.S. Virgin Islands. Prepared for the National Park Service.

Gladfelter, E., M. Anderson, H. Lund, and M. Davis, 1986. "Marine ecosystems of the Lesser Antilles: identification of representative sites." *Virgin Islands Biosphere Reserve Research Report Series*, No. 7, pp. 44.

Gladfelter, E.H., J.C. Bythell, and W.B. Gladfelter, 1991. "Ecological studies of Buck Island Reef National Monument, St. Croix, U.S. Virgin Islands: A quantitative assessment of selected components of the coral reef ecosystem and establishment of long term monitoring sites." Part 1. Prepared for the National Park Service.

Gladfelter, E.H. and W.B. Gladfelter, 1980. "Environmental studies of Buck Island Reef National Monument. III. St. Croix, USVI." US National Park Service Report.

Gladfelter, E.H., W.B. Gladfelter, D.K. Hubbard, R.C. Carpenter and G.S. Simpson, 1979. "Environmental studies of Buck Island Reef National Monument, St. Croix, U.S. Virgin Islands." Part II. National Park Service Report.

Gladfelter, E. and R. Monahan, 1976. "Environmental studies of Buck Island Reef National Monument." *Proc. First Conference on Scientific Research in National Parks, New Orleans*. U.S. Government Printing Office, Washington, DC.

Gladfelter, E.H. and R.K. Monahan, 1977. "Primary production and calcium carbonate deposition rates in *Acropora palmate* from different positions in the reef." *Proc. 3rd Intl Coral Reef Symp.* 2: 389-394.

Gladfelter, E.H. and R.K. Monahan, 1979. "Environmental studies of Buck Island Reef National Monument." *Proc. 1st Conference on Scientific Research in the National Parks*. Vol. 1. US Dept. of Interior National Park Service Trans. and Proc. Series No. 5: 679-681.

Gladfelter, E.H., R.K. Monahan, and W.B. Gladfelter, 1978. "Growth rates of five reef building corals in the northeastern Caribbean." *Bulletin of Marine Science*. 28: 728-734.

Gladfelter, W.B., 1978. "General ecology of the cassiduloid urchin *Cassidulus caribbearum*." *Marine Biology* 47: 149-160.

Gladfelter, W.B., 1982. "White-band disease in *Acropora palmata*: Implications for the structure and growth of shallow reefs." *Bulletin of Marine Science*. 32(2):639-643.

Gladfelter, W. B., 1988. "Tropical marine organisms and communities. St. Croix, USVI." *Argus*.

Gladfelter, W. B., 1991. "Population structure of *Acropora palmata* on the windward forereef, Buck Island National Monument; seasonal and catastrophic changes 1988-1989." Chapter 5. *Ecological studies of Buck Island Reef National Monument, St. Croix, US Virgin Islands: a quantitative assessment of selected components of the coral reef ecosystem and establishment of long term monitoring sites*. Part 1. NPS Coral Reef Assessment Program.

Gladfelter, W.B. and E.H. Gladfelter, 1978. "Fish community structure as a function of habitat structure on West Indian patch reefs." *Rev. Biol. Trop.*, 26:65-84.

Gladfelter, W. B., E. H. Gladfelter, R.K. Monahan, J.C. Ogden, and R. F. Dill, 1977. "Environmental studies of Buck Island National Monument, St. Croix, USVI."

Gladfelter, W.B. and W.S. Johnson, 1983. "Feeding niche separation in a guild of tropical reef fishes (Holocentridae)." *Ecology* 64: 552-563.

Gladfelter, W.B, J.C. Ogden and E.B. Gladfelter, 1980. "Similarity and diversity among coral reef fish communities: a comparison between tropical western Atlantic (Virgin Islands) and tropical central Pacific (Marshall Islands) patch reefs." *Ecology*, 61:1156-1168.

- Goenaga, C. and R. Boulon, 1992. "The state of Puerto Rican and US Virgin Island corals: an aid to managers." Report to the CFMC.
- Goodwin, M., 1986. "Characterization of Lesser Antillean fisheries," VIRMC Report No. 14.
- Groshens, E.B., 1993. "Internesting and post-nesting movement and behavior of Hawksbill sea turtles, *Eretmochelys imbricata*, at Buck Island Reef National Monument, St. Croix, USVI." Blacksburg, VA, Virginia Polytechnic Institute and State University.
- Hargraves, P.E., R.W. Brody, and P.R. Burkholder, 1970. "A study of phytoplankton in the Lesser Antilles region." *Bulletin of Marine Science*. 20:331-349.
- Herrnkind, W.F. and M.J. Butler, 1986. "Factors regulating postlarval settlement and juvenile microhabitat use by spiny lobsters, *Panulirus argus*." *Marine Ecology Program Service* 34:23-30.
- Herrnkind, W.F., M.J. Butler, J.H. Hunt & M. Childress, 1997. "Role of physical refugia: implications from a mass sponge die-off in a lobster nursery in Florida." *Mar. Freshwater Res.* 48:759-769.
- Herrnkind, W.F., M.J. Butler and R.A. Tankersley, 1988. "The effects of siltation on recruitment of spiny lobsters, *Panulirus argus*." *Fish. Bull.* 86:331-338.
- Herrnkind, W.F., P. Jernakoff & M.J. Butler, 1994. "Puerulus and post-puerulus ecology." In *Spiny Lobster Management* (Eds. B.F. Phillips, J.S. Cobb & J. Kittuka) (Blackwell, Oxford).
- Herrnkind, W.F., J.A. Van Derwalker, and L. Barr, 1975. "Population dynamics, ecology and behavior of spiny lobsters, *Panulirus argus*, of St. John, U.S.V.I.: (IV) Habitation, patterns of movement and general behavior." *Results of the Tektite program: coral reef invertebrates and plants*, editors S.Earle and R. Lavenberg. Natural History Museum of Los Angeles County.
- Hessler, R.R. and H.L. Sanders, 1967. "Faunal diversity in the deep sea." *Deep Sea Research* 14:123-125.
- Hillis, Z-M., 1990. "Buck Island Reef National Monument Sea Turtle Research Program: 1989 – The year of Hawksbills and hurricanes." *Proc. 10th Ann. Workshop on Sea Turtle Biol. and Cons.* NOAA Tech. Mem. NMFS-SEFC-278: 15-17.
- Hillis, Z-M., 1991. "Buck Island Reef National Monument Sea Turtle Program, 1990." *11th Ann. Workshop on Sea Turtle Biol. and Cons.* NOAA Tech. Mem. NMFS-SEFC-361:47-53.
- Hillis, Z-M., 1992. "Buck Island Reef National Monument Hawksbill Sea Turtle Research Program, 1991." *12th Ann. Sym. on Sea Turtle Biol. and Cons.* NOAA Tech. Mem.-NMFS-SERC-361:196-199.

Hillis, Z-M., 1994. "The first five years at Buck Island Reef National Monument – the Hawksbill story." *Proc. 13th Ann. Symp. on Sea Turtle Biol. and Cons.* NOAA Technical Memorandum NMFS-SEFSC-341: 242-245.

Hillis, Z-M., 1994. "The hawksbill turtles of Buck Island Reef National Monument: a shared resource of the Caribbean." *Proc. 14th Ann. Sym. of Sea Turtle Biol. and Cons.* NOAA Technical Memorandum NMFS-SEFSC-351:59-61.

Hillis, Z-M., 1995. "Characteristic breeding biology of the Hawksbill turtle (*Eretmochelys imbricata*) at Buck Island Reef National Monument, St. Croix, US Virgin Islands." *Proc. of the Int. Workshop on the Management of Marine Turtles 1005*, Tokyo, Japan.

Hillis, Z-M., 1995. "The Hawksbill turtles of Buck Island Reef National Monument: a shared Caribbean resource." *Park Science*.

Hillis, Z-M, R. Boulon, and M. Evans, 1998. "Status and trends: sea turtles of the Virgin Islands & Puerto Rico." In Mac, M.J., P.A. Opler, C.E. Puckett Haecker and P.D. Doran, eds. *Status and trends of the nation's biological resources*, U.S. Department of the Interior, U.S. Geological Survey, Washington, D.C., 1:334-7.

Hillis, Z-M, J. Fleetwood, and K. McIntyre, 1990. "Buck Island Reef National Monument Sea Turtle Program, 1989." *11th Ann. Workshop on Sea Turtle Biol. and Cons.* NOAA Tech Mem- NMFS-SERC-278: 241-244.

Hillis, Z-M. and A.L. Mackay, 1989. "Buck Island Reef National Monument Sea Turtle Program, 1987-1988." *Proc. 9th Ann. Workshop on Sea Turtle Cons. and Biol.* NOAA Tech. Mem. NMFS-SEFC-232: 235-237.

Hillis, Z-M. and B. Phillips, 1997. "The hurricane season of the century, Buck Island Reef National Monument, St. Croix, Virgin Islands." *Proc. 16th Annual Symposium of Sea Turtle Cons. and Biol.*

Hillis-Starr, Z. and B. Phillips, In press. "Buck Island Reef National Monument Hawksbill nesting beach study – could conservation be working?" *Pros. 18th Sym Sea Turtle Biol and Cons.*

Hubbard, D., 1981. "Preliminary studies of the fate of shallow-water detritus in the basin north of St. Croix, U.S.V.I." *Proc. Fourth Int. Coral Reef Symp.*, Manila, 1: 383-387.

Hubbard, D.K., 1987. "A general review of sedimentation as it relates to environmental stress in the Virgin Islands Biosphere Reserve and the Eastern Caribbean in general." *Virgin Islands Resource Management Cooperative: Biosphere Reserve Research Report No 20*. Virgin Islands National Park.

Hubbard, D.K. (ed.), 1989. "Terrestrial and marine geology of St. Croix, U.S. Virgin Islands." Special Publication Number 8. West Indies Laboratory, Teague Bay. St. Croix, USVI.

Hubbard, D.K., 1991. "Geological development of Buck Island Reef National Monument." Prepared for the National Park Service. Published by West Indies Laboratory. St. Croix, USVI.

Hubbard, D.K., R. Burke, and I. Gill, 1986. "Styles of reef accretion along a steep, shelf-edge reef, St. Croix, USVI." *J. Sed. Petrology* 56:848-861.

Hubbard, D.K., E.H. Gladfelter and J.C. Bythell, 1993. "Comparison of biological and geological perspectives of coral-reef community structure at Buck Island, U.S. Virgin Islands." *Proc. Colloquium on Global Aspects of Coral Reefs: Health, hazards and history*. UM.

Hubbard, D.K., K.M. Parsons, J.C. Bythell, and N.D. Walker, 1991. "The effects of Hurricane Hugo on the nearshore environments of St. Croix, US Virgin Islands – A preliminary assessment." *J. Coastal Res. Spec. Issue No. 8*: 33-48.

Hubbard, D.K., J.L. Sadd, A.I. Miller, I.P. Gill, and R.F. Dill, 1981. "The production, transportation, and deposition of carbonate sediments on the insular shelf of St. Croix, USVI." Technical Report No. MG-1. West Indies Laboratory. St. Croix, USVI.

Hubbard, D.K., J.L. Sadd, and H.H. Roberts, 1981. "The role of physical processes in controlling sediment transport patterns on the insular shelf of St. Croix, US Virgin Islands." *Proc. 4th Intl Coral Reef Symp.* 1: 399-404.

Hubbard, D. and Scaturo, D., 1985. "Growth rates of seven species of scleractinian corals from Cane Bay and Salt River, St. Croix, USVI." *Bulletin of Marine Science*. 36: 325-338.

Island Resources Foundation, 1977. "Marine environments of the Virgin Islands, Technical supplement No. 1." Prepared for the USVI Government, Office, Coastal Zone Management Program. St. Thomas, USVI.

Island Resources Foundation, 1986. "Puerto Rico and Virgin Islands coastal barriers summary report." Prepared for the Department of the Interior, U.S. Fish and Wildlife Service. St. Thomas, USVI.

Island Resources Foundation, 1989. "Eastern Caribbean parks and protected areas bibliography." St. Thomas, USVI.

Island Resources Foundation, 1993. "St. Croix Coral Reef System Area of Particular Concern (APC) draft management plan." Prepared for the Department of Planning and Natural Resources/Division of Coastal Zone Management. St. Thomas, USVI.

- Jennings, C.A., 1992. "Survey of non-charter boat recreational fishing in the U.S. Virgin Islands." *Bull. Mar. Sci.* 50(2): 342-351.
- Jerrard, J.H., 1843. *Letters from the Virgin Islands: illustrating life and manners in the West Indies*. London, John Van Voorst.
- Johannes, R.E., 1975. "Pollution and degradation of coral reef communities." In *Tropical Marine Pollution*. E.J. Wood and R.E. Johannes (eds.). Elsevier Oceanography Series, 12. Elsevier Scientific Publishing Company. Amsterdam.
- Kaufman, L.S. and J.P. Ebersole, 1984. "Microtopography and the organization of two assemblages of coral reef fishes in the West Indies." *J. Exp. Mar. Biol.* 78:253-278.
- Kier, P., 1971. "The echinoids of St. Croix, VI." Smithsonian Inst., Washington, D.C.
- Kinsie R.A., 1973. "The zonation of West Indian gorgonians." *Bulletin of Marine Science*. 23:93-155.
- Lamb, G., 1957. "Endangered species of birds in the US Virgin Islands." New York, *Pan. Am. Sect. Terr. Comm. Bird Preserve, Res. Res. Report No. 2*, pp.6.
- Lang, J.C., H.R. Lasker, E.H. Gladfelter, P. Hallock, W.C. Jaap, F.J. Losada, and R.G. Muller, 1992. "Spatial and temporal variability during periods of "recovery" after mass bleaching on Western Atlantic coral reefs." *American Zoology* 32:696-706.
- Lessios, H.A., D.R. Robertson, and J.D. Cubit, 1984. "Spread of *Diadema* mass mortality through the Caribbean." *Science*. 226:335-337.
- Lewis, S. and P. Wainwright, 1985. "Herbivore abundance and grazing intensity on a Caribbean coral reef." *J. Exper. Med.*
- Lidz, B., 1988. "Upper Cretaceous (Campanian) and Cenozoic stratigraphic sequence, northeast Caribbean (St. Croix, U.S. Virgin Islands)." *Geol. Soc. Amer. Bull.* 100(2): 282-298.
- Lobel, P.S. and J.C. Ogden, 1981. "Foraging by the herbivorous parrotfish *Sparisoma radians*." *Marine Biology* 64:173-183.
- Macintyre, I.G., 1988. "Modern coral reefs of Western Atlantic: New geological perspective." *The American Association of Petroleum Geologists Bulletin*. 72(11):1360-1369.
- Macintyre, I.G. and W.H. Adey, 1990. "Buck Island Bar, St. Croix, USVI: a reef that cannot catch up with sea level." *Atoll Research Bulletin*. 336:1-7.

Mackay, A.L., 1992-1993. "Sea turtle activity survey on St. Croix, USVI." K.A. Bjorndal, A.B. Bolten, D.A. Johnson, P.J. Eliazar, compilers. *Proc. 14th Ann. Symp. on Sea Turtle Biol. and Cons.* NOAA Technical Memorandum NMFS-SEFSC-351, pp. 247-248.

Mackay, A.L. and J.L. Rebholz, 1994, 1995. "Sea turtle activity survey St. Croix, USVI" Final Report.

Marx, R.F. and E.L. Towle, 1971. *Shipwrecks of the Virgin Islands (1523-1825)* Second Edition. Caribbean Research Institute, St. Thomas, USVI.

Maynes, L.J., 1991. "Research on the biology and behavior of the Hawksbill sea turtle (*Eretmochelys imbricata*) nesting at Buck Island Reef National Monument."

Mayor, P., B. Phillips and Z. Hillis-Starr, 1998. "Results of stomach content analysis on the juvenile Hawksbill Sea Turtles of Buck Island Reef National Monument, US Virgin Islands." *Proc. 17th Sea Turtle Sym.* NOAA Tech Mem. NMFS-SEFSC-415.

McDonald, D., P. Dutton, and R.H. Boulon, 1991; 1993; 1995; 1996. "Tagging and nesting research of Leatherback sea turtles (*Dermochelys coriacea*) on Sandy Point, St. Croix, USVI." Tech. Reports, USFWS, DOI.

McDonald, D., B. Krueger, J. Ferguson and R.H. Boulon, 1996. "Tagging and nesting research of leatherback sea turtles (*Dermochelys coriacea*) on Sandy Point, St. Croix, USVI." Tech. Reports, USFWS, DOI.

McFarland, W.N., 1979. "Observations on recruitment in Haemulid fishes." *Proceedings of the Gulf & Caribbean Fisheries Institute*.

McFarland, W.N., E.B. Brothers, J.C. Ogden, M.J. Shulman, E.L. Bermingham, and N.M. Kotchian-Prentiss, 1984. "Recruitment patterns in young French grunts, *Haemulon flavolineatum* (Family Haemulidae), at St. Croix, USVI." *Fishery Bulletin*. 83(3):413-426.

McFarland, W.N. and N.M. Kotchian, 1982. "Interaction between schools of fish and mysids." *Behav. Ecol. Sociobiol.* 11: 71-76.

McRoy, C.P., 1983. "Nutrient cycles in Caribbean seagrass ecosystems." Appendix I in *Coral reefs, seagrass beds, and mangroves: Their interaction in the coastal zones of the Caribbean*. Unesco Reports in Marine Science No. 23. Report of a workshop held at West Indies Laboratory, St. Croix, USVI, May 1982.

Meyer, J.L., E.T. Schultz, and G.S. Helfman, 1983. "Fish schools: An asset to corals." *Science*. 220:1046-1048.

Miller, A.I., G. Llewellyn, K.M. Parsons, H. Cummins, and M.R. Boardman, 1992. "Effect of Hurricane Hugo on molluscan skeletal distributions, Salt River Bay, St. Croix, USVI." *Geology*. 20(1):23-26.

Minerals Management Service, In development. Supplemental Official Outer Continental Shelf Block Diagrams, U.S. Virgin Islands.

Mitton, J.B., C.J. Gerb, Jr., and K.S. Orr, 1989. "Population structure, larval dispersal, and gene flow in the Queen Conch, *Strombus gigas*, of the Caribbean." *Biology Bulletin*. 177:356-362.

Moore, D., 1969. "Report on the marine mollusca collected on St. Croix." West Indies Laboratory, St. Croix, VI.

Multer, H. and L. Gerhard (eds.), 1974. "Guidebook to the geology and ecology of some marine and terrestrial environments, St. Croix, U.S. Virgin Islands." West Indies Laboratory, St. Croix, VI, Spec. Publ. No. 5..

Munro, J.L. (Editor), 1983. "Caribbean coral reef fishery resources." *International Center for Living Aquatic Resources Management*. (The biology, ecology, exploitation and management of Caribbean reef fishes: scientific report of ODA/UWI fisheries ecology research project 1969-1973: University of the West Indies, Jamaica; second edition).

Munro, J.L. and I.R. Smith, 1983. "Management strategies in multi-species complexes in artisanal fisheries." Trinidad: ICLARM, No. 172.

Neudecker, S., 1982. "Ecological relationships of Chaetodontid and Pomacanthid fishes at St. Croix." Ph.D. dissertation, Univ. Calif., Davis, Calif.

Nichols, J.T., 1929. *The fishes of Puerto Rico and the Virgin Islands: Branchiostomidae to Sciaenidae*. New York: New York Academy of Sciences. Scientific Survey of Puerto Rico and the Virgin Islands Volume X – Part 2.

Nichols, J.T., 1929. *The fishes of Porto Rico and the Virgin Islands: Branchioscomidae to Sciaenidae*. New York: New York Academy of Sciences. Scientific Survey of Porto Rico and the Virgin Islands Volume X – Part 2.

Nichols, J.T., 1930. *The fishes of Porto Rico and the Virgin Islands: Pomacentridae to Ogcocephalidae*. New York: New York Academy of Sciences. Scientific Survey of Porto Rico and the Virgin Islands Volume X – Part 3.

Nowell-Usticke, G., 1960. *A check list of the marine shells of St. Croix, U.S. Virgin Islands and supplementary listing of new shells*. Lane Press, VT.

Ogden, J.C., 1976. "Some aspects of herbivore-plant relationships on Caribbean reefs and seagrass beds." *Aquatic Botany*. 2:103-116. Elsevier Scientific Publishing Company. Amsterdam, The Netherlands.

Ogden, J., 1974. "The major marine environments of St. Croix." In: Multer, H., and Gerhard, L. (eds.), *Guidebook to the geology and ecology of some marine and terrestrial environments of St. Croix, USVI*. West Indies Laboratory, Spec. Publ. 5.

Ogden, J.C., 1976. "Some aspects of herbivore-plant relationships on Caribbean reefs and seagrass beds." *Aquatic Botany*. 2:103-116.

Ogden, J.C., 1977. "Carbonate-sediment production by parrotfish and sea urchins on Caribbean reefs." *Studies in Geology*. 4:281-288.

Ogden, J.C., 1988. "The influence of adjacent systems on the structure and function of coral reefs." *Proc. 6th Intern. Coral Reef Symp.* 1:123-129.

Ogden, J.C., D.P. Abbott, and I. Abbott, 1973. "Studies on the activity and food of the echinoid *Diadema antillarum Philippi* on a West Indian patch reef." St. Croix, West Indies Laboratory. Special Publication No. 2.

Ogden, J.C., R.A. Brown, and N. Salesky, 1973. "Grazing by the echinoid *Diadema antillarum Philippi*: Formation of halos around West Indian Patch Reefs." *Science*. 182:715-717.

Ogden, J.C. and N.S. Buckman, n.d. "Movements, foraging groups, and diurnal migrations of the striped parrotfish *Scarus croicensis* Bloch (Scaridae)." *Ecology*. 54(3):589-596.

Ogden, J.C. and P.R. Ehrlich, 1977. "The behavior of heterotypic resting schools of juvenile grunts (Pomadasyidae)." *Marine Biology*. pp. 273-280.

Ogden, J.C. and E.H. Gladfelter (eds.), 1983. "Coral reefs, seagrass beds and mangroves: their interaction in the coastal zones of the Caribbean." UNESCO Rep. In *Marine Science* 23:6-16.

Ogden, J.C., D. Helm, J. Peterson, A. Smith, S. Weisman, 1972. "An ecological study of Tague Bay reef, St. Croix, USVI." West Indies Laboratory. Christiansted, St. Croix, USVI. Special publication in *Marine Biology* No. 1.

Ogden, J.C. and P.S. Lobel, 1978. "The role of herbivorous fishes and urchins in coral reef communities." *Environmental Biology of Fishes*. 3(1):49-63.

Ogden, J.C., L. Robinson, K. Whitlock, H. Daganhardt, and R. Cebulla, 1983. "Diel foraging patterns in juvenile Green turtles (*Chelonia Mydas* L.) in St. Croix, USVI." *J. Exp. Mar. Biol. and Ecol.* 66:199-205.

Ogden, J., J. Yntema, and I. Clavijo, 1975. "An annotated list of the fishes of St. Croix, U.S. Virgin Islands." West Indies Laboratory, Fairleigh Dickinson Univ., St. Croix, VI. Special publication #3.

Ogden, J.C. and J.C. Zieman, 1977. "Ecological aspects of coral reef-seagrass bed contacts in the Caribbean." *Proc. 3rd In. Coral Reef Sym.* University of Miami. Miami, FL.

Olsen, D.A., R. Boulon, and G.R. McCrain, 1981. "An analysis of the St. Thomas fishery with special reference to the benthic communities of the shelf south of St. Thomas, U.S. Virgin Islands." Final Report, NOAA, DOC, Contract Nos. NA- 79RAC00158 and NA-81RAA02977.

Olsen, D.A., and G.R. McCrain, n.d. "An analysis of the St. Thomas fishery with special reference to the south west roads area." NOAA Dept. Com. Rep.

Olsen, D.A., and R.S. Wood, 1983. "The marine resource base for marine recreational fisheries in the Caribbean." *Proc. Gulf. Carib. Fish. Inst.* 35: 152-160.

Olsen, D.A., R.S. Wood, and W.J. Tobias, 1983. "A preliminary economic analysis of cost returns of commercial fishermen using traps along the insular shelf of the U.S. Virgin Islands." Dept. Cons. and Cult. Affairs – Div. Fish and Wildlife, NMFS Ann. Rept.

Pemberton, R., J. Musick, Z. Hillis-Starr, and B. Phillips, In press. "The use of biotelemetry in determining the habitat utilization and foraging ecology of juvenile Hawksbill Sea Turtles (*Eretmochelys imbricata*) at Buck Island Reef National Monument, St. Croix, US Virgin Islands." *Proc. 19th Sym Sea Turtle Biol and Cons.*

Philibosian, R. and J. Yntema, 1977. *Endangered, threatened, and extinct birds and mammals of the Virgin Islands*. St. Thomas: V.I. Bureau of Fish and Wildlife.

Philibosian, R. and J.A. Yntema, 1977. "Annotated checklist of birds, mammals, amphibians, and reptiles of the Virgin Islands and Puerto Rico. St. Croix: Information Services."

Phillips, B., 1996. "Summary Report for Buck Island Reef NM Hawksbill Foraging Survey." National Park Service Report Contract No. OM-1443PX536097056.

Phillips, B., 2000. "Buck Island Reef National Monument, Juvenile Hawksbill Sea Turtle research and monitoring protocols." USGS/NPS Inventory & Monitoring Program.

Phillips, B., 2000. "Buck Island Sea Turtle nesting research and monitoring program protocols." USGS/NPS Inventory & Monitoring Program.

Phillips, B. and Z-M. Hillis, 1995. "Residents or roamers? An in-water survey of hawksbill sea turtles at Buck Island Reef National Monument." *Proc. 15th Ann. Sym. on Sea Turtle Biol and Cons.* NOAA Technical Memorandum NMFS-SEFSC-387.

Phillips, B. and Z-M. Hillis, 1995. Summary Report for Buck Island Reef NM Hawksbill Foraging Survey – Pilot Study, 1994-1995.

Plan Development Team, 1990. "The potential of marine fishery reserves for reef fish management in the U.S. southern Atlantic." NOAA Tech. Mem. NMFS SEFC-261.

Polunin, N.V.C. and C.M. Roberts, 1993. "Greater biomass and value of target coral-reef fishes in two small Caribbean marine reserves." *Marine Ecology Program Service*, 100:167-176.

Randall, J.E., 1960. "Grazing effect of parrotfishes (*Sparisoma* spp.) on sea grasses (*Thalassia* and *Cymodocea*) in the Virgin Islands." *Assoc. Island Marine Laboratories*. Third meeting: 20-21.

Randall, J.E., 1967. "Food habits of reef fishes of the West Indies." *Studies in Trop. Ocean*. 5: 665-673, 824-847.

Randall, J. and Schroeder, 1962. "New underwater park." *Sea Frontiers*.

Reed, J.K., 1980. "Distribution and structure of deep-water *Oculina varicose* coral reefs off central eastern Florida." *Bull. of Mar. Sci.* 30(3):667-677.

Roberts, C.M. and N.V.C. Polunin, 1993. "Marine reserves: simple solutions to managing complex fisheries?" *Ambio*. 22:363-368.

Robins, C.R., 1991. "Regional diversity among Caribbean fish species." *Bioscience*. 41(7):458-459.

Robinson, A.H., 1973. "Natural versus visitor related damage to shallow water corals: Recommendations for visitor management and the design of underwater nature trails in the Virgin Islands." National Park Service.

Robinson, L., 1976. "Analysis of a mollusk shell assemblage from Glynn I, St. Croix." Off. Terr. Arch., Dept. Conserv. Cult. Aff., St. Thomas, VI.

Rogers, C.S., 1985. "Degradation of Caribbean and western Atlantic coral reefs and decline of associated fisheries." *Proc. 6th Int. Coral Reef Sym.*, pp. 491-496.

Rogers, C.S., In press. "The status of the coral reefs of the US Virgin Islands (2000)." In: *Status of the US coral reefs*. NOAA.

- Rogers, C.S., H. C. Fitz, III, M. Gilnack, J. Beets, and J. Hardin, 1984. "Scleractinian coral recruitment patterns at Salt River submarine canyon, St. Croix, U.S.V.I." *Coral Reefs* 3:69-76.
- Rogers, C.S., T.H. Suchanek, F.A. Pecora, 1982. "Effects of Hurricanes David and Frederic (1979) on shallow *Acropora palmate* reef communities: St. Croix, U.S. Virgin Islands." *Bulletin of Marine Science*. 32:532-548.
- Sale, P.F. (Editor), 1992. *The ecology of fishes on coral reefs*. London, England: Academic Press.
- Salm, R.V., 1980. "Guidelines for the establishment of coral reef reserves." Prepared for WWF/IUCN.
- Salm, R.V., 1984. "Ecological boundaries for coral-reef reserves: Principles and guidelines." *Environmental Conservation*. 11(3):209-215.
- Sammarco, P.W., 1982. "Effects of grazing by *Diadema antillarum philippi* (Echinodermata: Echinoidea) on algal diversity and community structure." *J. of Exp. Mar. Biol. and Ecol.* 65:83-105.
- Sammarco, P.W., J.S. Levington, and J.C. Ogden, 1974. "Grazing and control of coral reef community structure by *Diadema antillarum* Philippi (Echinodermata: Echinoidea): a preliminary study." *J. Mar. Res.* 32(1):47-53.
- Schmitt, W.L. and C.R. Shoemaker, 1935. *Crustacea Macrura and Anomura of Puerto Rico and the Virgin Islands. The Amphipods of Puerto Rico and the Virgin Islands*. New York: New York Academy of Sciences. Scientific survey of Puerto Rico and the Virgin Islands Volume XV – Part 2.
- Scilacci, T., 1989. "The effect of substrate and depth on *Acanthemblemaria aspera*." *Center for Marine Resources*. Spring semester student research reports.
- Seaman, G.A., 1961. *Mammals, reptiles & amphibians of the Virgin Islands*. Fish and Wildlife Service, USVI.
- Sheppard, C.R.C., 1982. "Coral populations on reef slopes and their major controls." *Marine Ecology Progress Series*. 7:83-115.
- Shapiro, D.Y. and R.H. Boulon, 1987. "Evenly dispersed social groups and intergroup competition for juveniles in a coral reef fish." *Behav. Ecol. Sociobiol.* 21: 343 - 350.
- Simpson, G.S., 1979. "Predation on live coral by the parrotfishes *Scarus vetula* and *Sparisoma viride*." University of the Pacific.

Small, E., 1982. "Sea turtle nesting at Virgin Islands National Park and Buck Island Reef National Monument." Abstracts of the Colloquium on Long-term Ecological Research in the Virgin Islands. National Park Service, Southeast Regional Office.

Small, V., 1982. "Sea turtle nesting at Virgin Islands National Park and Buck Island Reef National Monument, 1980-1981." Research/Resource Management Report SER-61, DOI, NPS, SERO, pp.54.

Starbird, C.H. and Z-M Hillis, 1991. "The effects of Hurricane Hugo on the nesting behavior of the Hawksbill sea turtle (*Eretmochelys imbricata*)." *Proc. 11th Ann. Workshop on Sea Turtle Biol. and Cons.* NOAA Tech. Mem. NMFS-SERC.

Starbird, C.H. and Z-M Hillis, 1992. "Telemetry studies of interesting movements and behavior of Hawksbill sea turtles (*Eretmochelys imbricata*) around Buck Island Reef National Monument." *Proc. 12th Ann. Workshop on Sea Turtle Biol. and Cons.* NOAA Tech. Mem. NMFS-SERC.

Stenek, R.S. and W.H. Adey, 1976. "The role of environment in control of morphology in *Lithophyllum congustum*, a Caribbean algal ridge guild." *Botanica Marina*. XIX:197-215.

Stoddart, D.R., 1971. "Coral reefs and islands and catastrophic storms." Chapter 9. In: Steers, J.A., editor. *Applied Coastal Geomorphology*. Cambridge, MA: M.I.T. pp. 155-197.

Stoner, A.W. and F.G. Lewis, III., 1985. "The influence of quantitative and qualitative aspects of habitat complexity in tropical sea grass meadows." *J. Exp. Mar. Biol. and Ecol.* 94:19-40.

Suchanek, T., 1989. "A guide to the identification of the common corals of St. Croix." D.K. Hubbard, ed., *Terrestrial and Marine Geology of St. Croix, U.S. Virgin Islands*. West Indies Laboratory. St. Croix, USVI. pp. 197-213 (Special publication No. 8).

Suchanek, T.H. and D.J. Green, 1981. "Interspecific competition between *Palythoa caribaeorum* and other sessile invertebrates on St. Croix reefs, U.S. Virgin Islands." *Proc. Fourth Intl'l Coral Reef Symp.* 2: 679-684.

Suchanek, T.H., S.L. Williams, J.C. Ogden, D.K. Hubbard, and I.P. Gill, 1985. "Utilization of shallow-water seagrass detritus by Caribbean deep-sea macrofauna: C evidence." *Deep-Sea Research*. 32(2):201-214.

Swingle, W.E., A.E. Dammann & J.A. Yntema, 1970. "Survey of the commercial fishery of the Virgin Islands of the United States." *Proc. Gulf. Carib. Fish. Inst.* 20:110-121.

Sylvester, J., A. LaPlace, and R. Quetel, 1977. "Analysis of catch data for the Virgin Islands fishery, 1976-1977." Department of Conservation and Cultural Affairs, PL 88-309 Report: Project No. 2-239-R-3.

Tetra Tech, Inc., 1991. "Ecological Risk Management Analysis for Region II: Distinctive Habitats of Puerto Rico and the U.S. Virgin Islands." Washington, D.C.: US Environmental Protection Agency, Office of Pollution Prevention. TC-5314-03 Final Reports, pp. 120.

Tetra Tech, Inc., 1991. "Options to prevent degradation of pristine distinctive habitats in Puerto Rico and the U.S. Virgin Islands." Prepared for the U.S. Environmental Protection Agency. Bellevue, WA.

Teytaud, A.R., 1980. "Preliminary report on potential Significant Natural Area (SNA) sites." Department of Conservation and Cultural Resources. St. Thomas, USVI.

Teytaud, A.R., 1980. "Draft Guidance Plan for the St. Croix Coral Reef System Area of Particular Concern." Department of Conservation and Cultural Affairs. St. Croix, USVI.

Teytaud, A., 1981. "Guidance plan for the St. Croix Coral Reef System, Area of Particular Concern, St. Croix, U.S. Virgin Islands." Div. Coastal Zone Mgt., Dept. Conserv. Cult. Aff. St. Thomas, VI.

Teytaud, A.R., 1987. "St. Croix Coral Reef System APC/SNA Report (Draft)." Department of Conservation and Cultural Affairs. St. Croix, USVI.

Thayer, G.W., K.A. Bjorndal, J.C. Ogden, S.L. Williams, and J. C. Zieman, 1984. "Role of larger herbivores in seagrass communities." *Estuaries*. 7(4A):351-376.

Thayer, G.W., D.W. Engel, and K.A. Bjorndal, 1982. "Evidence for short-circuiting of the detritus cycle of seagrass beds by the Green turtle, *Chelonia mydas*. L." *Journal of Experimental Marine Biology and Ecology*. 62:173-183.

The Leatherback and Hawksbill Turtle Recovery Team, 1993. "Recovery plan for Hawksbill turtles in the U.S. Caribbean Sea, Atlantic Ocean, and Gulf of Mexico (*Eretmochelys imbricata*)." St. Petersburg, FL: National Marine Fisheries Service.

Thomas, L.P., 1960. "A note on the feeding habits of the West Indian sea star *Oreaster reticulatus* (Linnaeus)." *Journ. Fla. Acad. Sci.* 23(2):167-168.

Thomas, L., 1970. "Echinodermata collected at St. Croix, U.S. Virgin Islands." West Indies Laboratory, St. Croix, VI, Spec. Proj. No. 5.

Tighe, S.A., 1981. *Grazing of seagrasses by the Green turtle (Chelonia mydas) in St. Croix, USVI*. Rutherford, NJ: Fairleigh Dickinson University.

Tobias, W.J., 1987. "Resource evaluation of the bigeye scad, *Selar crumenophthalmus* (Bloch), in the insular shelf waters around St. Croix, U.S. Virgin Islands." *Proc. Gulf. And Carib. Fish. Inst.* 40th Ann. Sess., Curacao, N.A.

Tobias, W., 1990. "Resource evaluation of commercially important pelagic fish species in the territorial sea and fisheries conservation zone adjacent to St. Croix, U.S. Virgin Islands." Final Report for Saltonstall-Kennedy #NA-88WC-H-SK064. DPNR, Govt. Virgin Islands pp. 36.

Tobias, W., 1997. "Three year summary report (April 1994-March 1997)." Cooperative Fishery Statistics Program #sf-42 (NA27FT0301-01).

Tobias, W., E. Telemaque, and M. Davis, 1988. "Buck Island fish and shellfish populations." *Virgin Islands Resource Management Cooperative: Biosphere Reserve Research Report*, No. 26.

Tomascik, T. and F. Sander, 1985. "Effects of eutrophication on reef-building corals." *Marine Biology*. 87:143-155.

Towle, E.L., 1995. "Guidelines for integrated planning and management of coastal and marine areas in the wider Caribbean region." Island Resources Foundation. Kingston, Jamaica: United National Environment Program, Caribbean Environment Program, Regional Coordinating unit.

Towle, E. C. Howell, and W. Rainey, 1976. "Marine Environments of the Virgin Islands." Virgin Islands Planning Office. Technical Supplement No. 1.

Towle, E.L. and A.R. Teytaud, 1982. "Caribbean island resource management: an annotated bibliography – U.S. man and the biosphere program." St. Thomas, VI: Island Resources Foundation.

Tyson, G.F., 1983. *Register of Virgin Islands Shipwrecks 1593-1917*. Island Resources Foundation, St. Thomas.

USVI Government/DPNR, n.d. Public Notice regarding historic resources within submerged lands of the U.S. Virgin Islands. Issued by R.E. Adams, DPNR Commissioner.

Valdes-Pizzini, M., 1992. "Social impact assessment on shallow-water reef fish, queen conch and coral fishery management plans."

van Duyl, F.C., R.P. Bak, and J. Sybesma, 1981. "The ecology of the tropical compound Ascidian *Trididemnum solidum*. Reproductive strategy and larval behavior." *Marine Ecology Program Service* 6:35-42.

van Name, W.G., 1930. *The ascidians of Puerto Rico and the Virgin Islands*. New York: New York Academy of Sciences (scientific survey of Puerto Rico and the Virgin Islands Volume X – Part 4. pp. 403-535.

van't Hof, T., 1985. "Workshop on economic benefits of marine protected areas. Managing a marine park." Washington, D.C. 20235: NOAA, Sanctuary Programs Division, U.S. Department of Commerce.

Vicente, V.P., R.H. Boulon and T. Tallevast, 1995. "Characteristics of Green turtle (*Chelonia mydas*) grazing grounds in some Caribbean islands." *Twelfth Annual Symposium on Sea Turtle Biology and Conservation*, 1992. NOAA Tech. Memo NMFS-SEFSC-361: 145-149.

Viertel, J. 1969. *Undersea Garden of the Virgin Islands*.

Wahle, R. and R. Steneck, 1992. "Habitat restrictions in early benthic life: experiments on habitat selection and in situ predation with the American lobster." *J. Exp. Mar. Biol. and Ecol.* 157:91-114.

Warmke, G.L. and RT Abbott, 1962. *Caribbean Seashells. A guide to the marine mollusks of Puerto Rico and other West Indian Islands, Bermuda and the Lower Florida Keys*. Livingston Publishing Company, Narberth, Pennsylvania, pp. 348.

Wauer, R., 1987. "A systematic approach to comprehensive resources management for the Caribbean National Parks.

Weil, E. and N. Knowlton, 1994. "A multi-character analysis of the Caribbean coral *Montastraea annularis* and its two sibling species, *M. faveolata* and *M. franksi*." *Bulletin of Marine Science*. 55(1):151-175.

Wells, S.M., 1988. *Coral Reefs of the world volume 1: Atlantic and Eastern Pacific*. Prepared by IUCN Conservation Monitoring Centre in collaboration with UNEP. Cambridge, U.K.

Whetten, J., 1962. "Geology of St. Croix, United States Virgin Islands." Ph.D. dissertation, Princeton Univ., Princeton, NJ.

Whetten, J., 1966. "Geology of St. Croix, U.S. Virgin Islands." *Geol. Soc. Amer. Mem.*:139-179.

Whetten, J., 1974. "Field guide to the geology of St. Croix, USVI." In: Multer, H., and Gerhard, L. (eds.), *Guidebook to the geology and ecology of some marine and terrestrial environments, St. Croix, USVI*. West Indies Laboratory, Spec. Publ. 5: 129-144.

Wibbels, T. and Z-M. Hillis, 1996. "Estimation of hatchling sex ratios of Hawksbill sea turtles from Buck Island Reef National Monument." *Proc. 16th Ann. Sym. on Sea Turtle Cons. & Biol.*

Wiginton, J.R., 1978. "Pigment composition under controlled light intensities as related to the distribution of five seagrasses in Texas and the Virgin Islands." M.A. Thesis. University of Texas at Austin.

Williams, S.L., 1988. "*Thalassia testudinum* productivity and grazing by Green turtles in a highly distributed seagrass bed." *Marine Biology*. 98:455-477.

- Wolff, N.G., 1985. "Food selection and resource partitioning by herbivorous fishes in mixed-species groups." *Proc. 5th International Coral Reef Congress*, Tahiti. 5:23-28.
- Wolff, N.G., 1983. "Behavioral ecology of herbivorous reef fishes in mixed-species foraging groups." Ph.D. Dissertation. Cornell University.
- Wolff, N.G., 1987. "Schooling tendency and foraging benefit in the ocean surgeonfish." *Behav. Ecol. Sociobiol.* 21: 59-63.
- Wolff, N., R. Grober-Dunsmore, C.S. Rogers, and J. Beets, 1999. "Management implications of fish trap effectiveness in adjacent coral reef and gorgonian habitats." *Envir. Biol. Fishes* 55:81-90.
- Wood, R.S. and D.A. Olsen, 1983. "Application of biological knowledge to the management of the Virgin Islands conch fishery." *Proc. Gulf and Carib. Fish Inst.* 35:112-121.
- Zieman, J.C., R.L. Iveson, and J.C. Ogden, 1984. "Herbivory effects on *Thalassia testudinum* leaf growth and nitrogen content." *Marine Ecology Progress Series.* 15:151-158.
- Zullo, E.S., 1986. *Sea turtle nesting at Virgin Islands National Park and Buck Island Reef National Monument, 1980-1985.* U.S. Dept. of Int. Park Service Rept.



THE SECRETARY OF THE INTERIOR
WASHINGTON



434462

Memorandum to the President

Date: December 21, 2000

From: Secretary Babbitt

Discussion of the Pompeys Pillar National Monument Proposal

Attached is a draft proclamation, with an accompanying map,¹ to establish the Pompeys Pillar National Monument in Montana. This memorandum describes: (a) the basis for my recommendation that you establish the Pompeys Pillar National Monument; (b) the draft proclamation; and (c) the resources, ownership patterns, and management issues present in the area. After careful review of the record, I am convinced that the objects satisfy the criteria for establishment of a national monument pursuant to the Antiquities Act, and that the boundaries of the land reserved represent the smallest area compatible with the proper care and management of those objects.

THE ANTIQUITIES ACT

Section 2 of the Antiquities Act, 16 U.S.C. 431, authorizes the President to establish as national monuments "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States...."

A. Objects of Historic or Scientific Interest

The proposed Pompeys Pillar National Monument is located approximately 25 miles east of Billings, Montana. The map appended to the draft proclamation sets out the boundaries of the land that would be reserved in the monument. The outer boundaries of the area encompass approximately 51 acres of land which are owned by the federal government and managed by the Bureau of Land Management (BLM). The draft proclamation attached to this memo describes

¹ The boundaries of the proposed monument are drawn on the map entitled "Pompeys Pillar National Monument," which would be attached to, and made a part of, your proclamation. It is not practicable, as of this date, to describe the boundaries of the land reserved as a part of the monument either by metes and bounds or by reference to designated subdivisions on official surveys shown on publicly recorded plats or maps. The Bureau of Land Management (BLM) will produce a description conforming to the BLM Specifications for Descriptions of Tracts of Land for Use in Land Orders and Proclamations as soon as practicable should you decide to proceed.

objects in the area that warrant protection as a monument. Attachment A is a bibliography of the principal sources of information relied upon in making this recommendation.

The proposed Pompeys Pillar National Monument is a massive sandstone outcrop that rises from an almost two-acre base on the banks of the Yellowstone River 150 feet toward Montana's Big Sky. The proposed monument's premier location at a natural ford in the Yellowstone River, and its geologic distinction as the only major sandstone formation in the area, have made Pompeys Pillar a celebrated landmark and outstanding observation point for more than eleven thousand years of human occupation. Hundreds of markings, petroglyphs, and inscriptions left by visitors have transformed this geologic phenomenon into a living journal of the American West.

The proposed monument's most notable visitor, Captain William Clark of the Lewis and Clark Expedition, arrived at Pompeys Pillar on July 25, 1806, on his return trip from the Pacific coast. Clark's journal recorded his stop at this "remarkable rock" with its "extensive view in every direction." He described an idyllic landscape of grassy plains, snow-capped mountains, and cliffs abutting the wandering river. Clark marked his presence by engraving his name and the date of his visit on the outcrop. This simple inscription is the only remaining physical evidence of Lewis and Clark's epic journey. In his journal, Clark named the rock Pompey's Tower, Pompey being Clark's nickname for Sacagawea's young son, Jean Baptiste Charbonneau, who was born at the expedition's winter camp at Fort Mandan on February 11, 1805. The name was changed to Pompeys Pillar by author Nicholas Biddle when his account of the Expedition was published in 1814.

Ethnographic and archaeological evidence indicates that the Pillar was a place of ritual and religious activity. Hundreds of petroglyphs on the face of the rock, noted by Clark in his journal, reflect the importance of the proposed monument to early peoples. The Crow people, the dominant residents of the region when Clark passed through, call the pillar "the Mountain Lions Lodge" in their language, and it figures prominently in Crow oral history. Pompeys Pillar also includes the markings and signature of a host of characters from the pioneer past, including fur trappers, Yellowstone River steamboat men, frontier army troops, railroad workers, missionaries, and early settlers. In 1873, Lieutenant Colonel George Armstrong Custer and his men camped at its base, where they came under attack from Sioux snipers.

B. Land Area Reserved for the Proper Care and Management of the Objects to be Preserved

The Antiquities Act authorizes the President, as part of his declaration of a national monument, to reserve land, "the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected." 16 U.S.C. § 431. The area proposed for reservation has been carefully delineated, based on review of available information, to meet the goals of effectively caring for and managing the objects in perpetuity. The draft proclamation and Attachment A accompanying this letter delineate the specific objects. The proposed monument includes the geological phenomenon known as Pompeys Pillar and the adjoining public land which is necessary for the proper care and management of this area.

LEGAL EFFECTS OF THE PROCLAMATION

There are several significant aspects of the draft proclamation. First, it would reserve only the federal lands in the area, because the Antiquities Act applies only to objects of historic or scientific interest "that are situated upon the lands owned or controlled by the Government of the United States." 16 U.S.C. § 431.

Second, the draft proclamation would be subject to valid existing rights. Thus, to the extent a person or entity has valid existing rights in the federal lands or resources within the area, the proclamation would respect their rights. The exercise of such rights could, however, be regulated in order to protect the purposes of the monument.

Third, the draft proclamation appropriates and withdraws the federal lands and interests in lands within the boundaries of the monument from entry, location, sale, leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws and from disposition under all laws relating to mineral and geothermal leasing. The lands here, being acquired, are not subject to the Mining Law of 1872, but persons occasionally try to locate claims on such lands. To provide clear public notice of their unavailability, the proclamation withdraws the land to prevent the location of new mining claims under the 1872 Mining Law. It also prevents the Secretary of the Interior from exercising discretion under the mineral leasing acts and related laws to lease or sell federal minerals within the boundaries of the proposed monument.

Fourth, the draft proclamation would not reserve water under federal law pursuant to the so-called Winters doctrine, but would not relinquish or abandon any existing federal rights. The proclamation would direct the Secretary of the Interior to work with appropriate state authorities to ensure that water resources needed for monument purposes are available.

ADMINISTRATION OF THE MONUMENT

A. Management by the Bureau of Land Management

The federal lands in the area described in the attached draft proclamation are currently under the jurisdiction of the BLM in the Department of the Interior. BLM manages the land pursuant to its basic organic authorities, the primary one being the Federal Land Policy and Management Act of 1976 (FLPMA).

I believe the area is best left under BLM management, and the attached draft proclamation would have the Secretary of the Interior manage the proposed monument through this agency, under its existing authorities, but subject to the overriding purpose of protecting the objects described in the draft proclamation. The establishment of the monument thus constitutes an overlay on the management regime otherwise applicable to lands managed by the BLM. It limits the

management discretion that the BLM would otherwise have by mandating protection of the historic and scientific objects within the national monument.

B. Impact of Monument Designation on Existing or Planned Activities in the Area

1. Currently permitted recreation and similar activities

Recreation and other similar uses would generally not be affected except where: (1) the BLM, through processes required by existing law, identifies places where such uses ought to be restricted or prohibited as necessary to protect the federal lands and resources, including the objects protected by the monument designation; or (2) the BLM finds a clear threat from such a use to the federal lands and resources, including the objects protected by the proposed monument designation, and the circumstances call for swift protective action. Such uses would, of course, remain subject to applicable laws and regulations, and would therefore remain subject to regulation and limitation under such provisions for reasons other than establishment of the monument. Hunting and fishing would continue to be governed under applicable laws.

2. Mineral activities

The mineral estate of the area is held by the United States in trust for the Crow Tribe. This proclamation would not enlarge or diminish the Crow Tribe's rights. There has been no activity and there is no known potential for oil and gas development or other mining activities.

CONCLUSION

Establishing the Pompeys Pillar National Monument would be an exemplary exercise of Presidential authority under the Antiquities Act, well in keeping with past practice through which many notable objects of historic and scientific interest have been preserved, to the Nation's great and lasting benefit. I strongly recommend you sign the proclamation.

A handwritten signature in black ink, appearing to read "B. B. B. B. B.", is positioned above the title of the Secretary of the Interior.

The Secretary of the Interior

DRAFT

Presidential Proclamation #####

Establishment of the Pompeys Pillar National Monument

By the President of The United States of America

A PROCLAMATION

Pompeys Pillar National Monument is a massive sandstone outcrop that rises from an almost two-acre base on the banks of the Yellowstone River 150 feet toward Montana's Big Sky, east of Billings. The monument's premier location at a natural ford in the Yellowstone River, and its geologic distinction as the only major sandstone formation in the area, have made Pompeys Pillar a celebrated landmark and outstanding observation point for more than eleven thousand years of human occupation. Hundreds of markings, petroglyphs, and inscriptions left by visitors have transformed this geologic phenomenon into a living journal of the American West.

The monument's most notable visitor, Captain William Clark of the Lewis and Clark Expedition, arrived at Pompeys Pillar on July 25, 1806, on his return trip from the Pacific coast. Clark's journal recorded his stop at this "remarkable rock" with its "extensive view in every direction." He described an idyllic landscape of grassy plains, snow-capped mountains, and cliffs abutting the wandering river. Clark marked his presence by engraving his name and the date of his visit on the outcrop. This simple inscription is the only remaining physical evidence of Lewis and Clark's epic journey. In his journal, Clark named the rock Pompey's Tower, Pompey being Clark's nickname for Sacagawea's young son, Jean Baptiste Charbonneau, who was born at the expedition's winter camp at Fort Mandan on February 11, 1805. The name was changed to Pompeys Pillar by author Nicholas Biddle when his account of the Expedition was published in 1814.

Ethnographic and archaeological evidence indicates that the Pillar was a place of ritual and religious activity. Hundreds of petroglyphs on the face of the rock, noted by Clark in his journal, reflect the importance of the monument to early peoples. The Crow people, the dominant residents of the region when Clark passed through, call the pillar "the Mountain Lions Lodge" in their language, and it figures prominently in Crow oral history. Pompeys Pillar also includes the markings and signature of a host of characters from the pioneer past, including fur trappers, Yellowstone River steamboat men, frontier army troops, railroad workers, missionaries, and early settlers. In 1873, Lieutenant Colonel George Armstrong Custer and his men camped at its base, where they came under attack from Sioux snipers.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431) authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

WHEREAS it appears that it would be in the public interest to reserve such lands as a national monument to be known as the Pompeys Pillar National Monument:

NOW, THEREFORE, I, William J. Clinton, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. § 225, 16 U.S.C. § 431), do proclaim that there are hereby set apart and reserved as the Pompeys Pillar National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Pompeys Pillar National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 51 acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing.

Lands and interests in lands within the proposed monument not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States.

The Secretary of the Interior shall manage the monument through the Bureau of Land Management, pursuant to applicable legal authorities, to implement the purposes of this proclamation.

The establishment of this monument is subject to any valid existing rights, including the mineral estate held by the United States in trust for the Crow Tribe.

Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction of the State of Montana with respect to fish and wildlife management.

This proclamation does not reserve water as a matter of Federal law. Nothing in this reservation shall be construed as a relinquishment or reduction of any water use or rights reserved or appropriated by the United States on or before the date of this proclamation. The Secretary shall

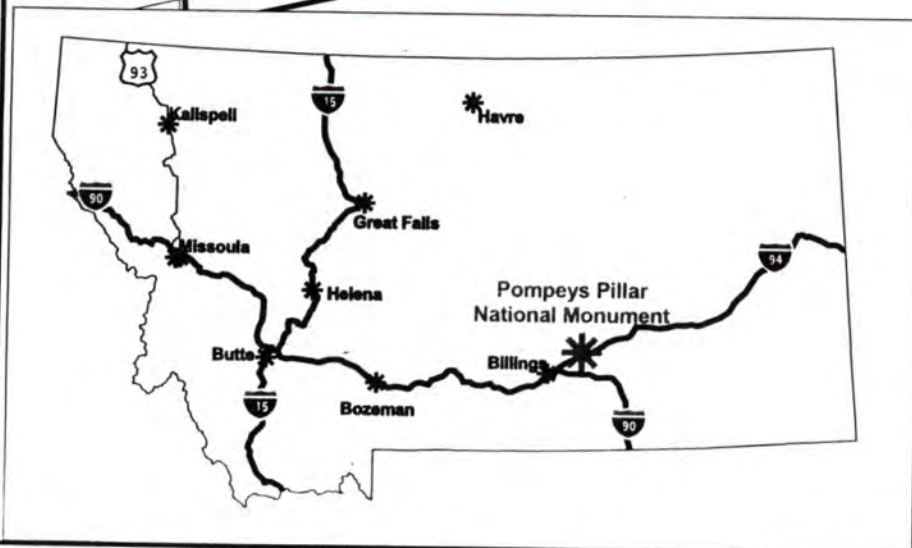
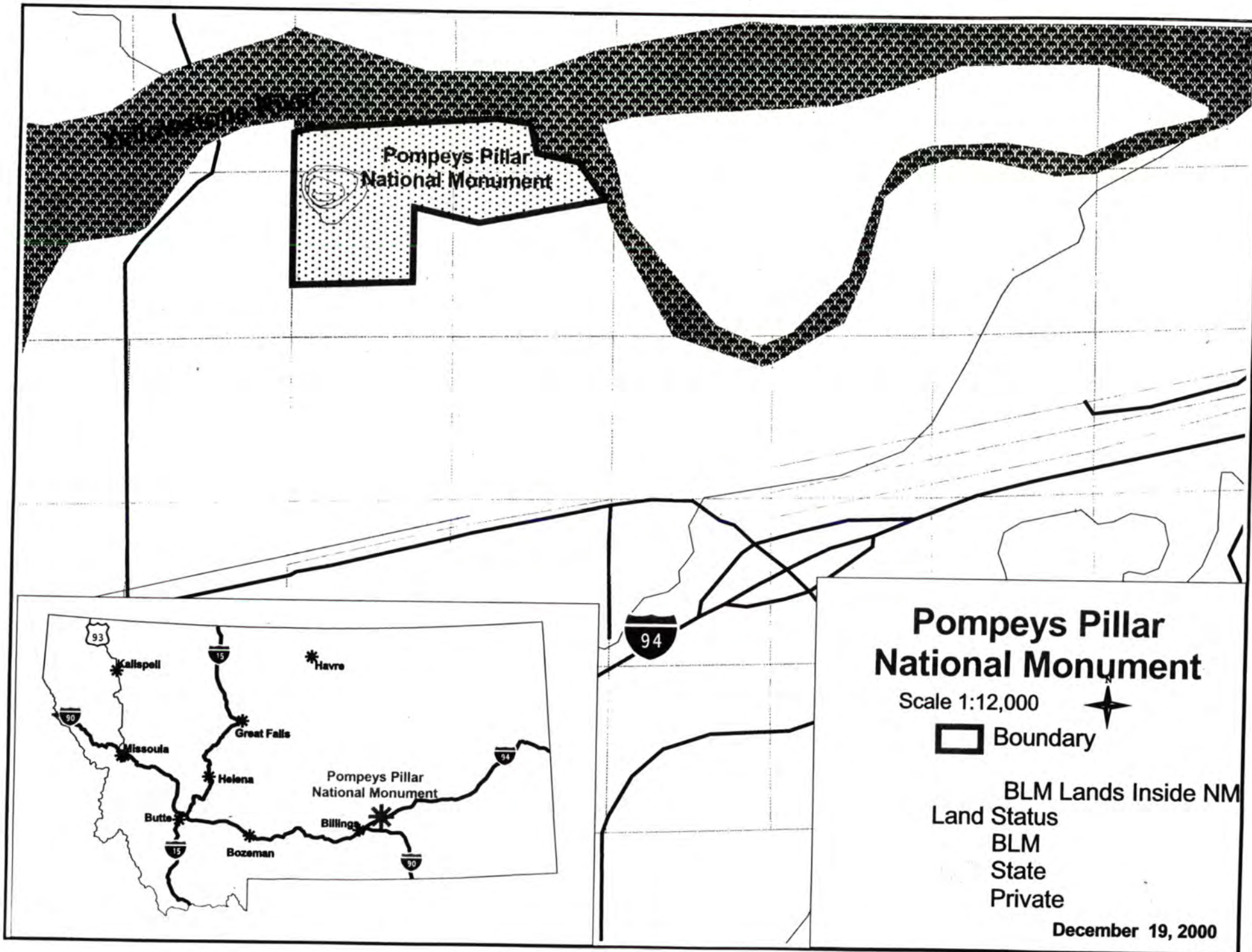
work with appropriate State authorities to ensure that any water resources needed for monument purposes are available.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this XX day of December, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fifth.

William J. Clinton



Bibliography
Proposed Pompeys Pillar National Monument

1991b. *Characteristics of Recreationists Engaging in Wildlife Related Recreation*. Technical Completion Report 91-8. Missoula, Montana: Institute for Tourism and Recreation Research, University of Montana.

Baden, Lt. Charles; 1904; The Yellowstone Expedition of 1873. Journal of the U.S. Cavalry Association Vol. XV: No. 54: pp 218-241.

Banner, Thomas D.; 1981; *The Life and Adventures of James P. Beckwourth*. Delmont R. Oswals, editor. Bison Books: Lincoln, pg 227.

Barlow, Major J.W.; 1872; Indian Interference with Northern Pacific Railroad. Senate Executive Document No. 16, 42nd Congress, 3rd Session. pp 5-11.

Bergeron, D., C Jones, D.L. Genter, and D Sullivan; 1992; P.D. Skaar's Montana Bird Distribution, Fourth Edition. Special Publication No. 2. Montana Natural Heritage Program. Helena, Montana.

Bradley, Lt. James H.; 1991; The March of the Montana Column. Edgar I. Stewart, editor. University of Oklahoma Press: Norman. Pp 65-66.

Brisbin, Major Jno. S.; 1973; "Report of Fort Pease". Military Engagements between United States Troops and Plains Indians Part IV: 1872-1809. George E. Pay, editor. University of Northern Colorado Museum of Anthropology Occasional Papers in Anthropology Ethnology Series No. 29.

Brown, C.J.D; 1971; *Fishes of Montana*. Big Sky Books, Montana State University, Bozeman. Montana.

BRW, Inc., January 1998; Draft Biological Resources Report for the Yellowstone River Bridge. Northwest of Pompeys Pillar (BR 568-1(8)2, CN 2431).

Burt, W.H. and R.P. Grossenheider; 1976; *A Field Guide to the Mammals of America North of Mexico*. The Peterson Field Guide Series. Houghton Mifflin Company, Boston, MA.

Capula, C.; 1989; *Reptiles and Amphibians of the World*. Simon and Schuster, New York, NY.

Clean Water Act, Section 404; Permits for the Discharge of Dredge and Fill Material. 33 U.S.C. 1344.

Coffin, B and L.; 1988; Pfannmuller. Minnesota's Endangered Flor and Fauna. University of Minnesota Press, Minneapolis, MN.

Coues, Elliott (ed); 1965; History of the Expedition under the Command of Lewis and Clark. Doves Publication, Inc.: New York. pp 1150-1151.

Custer, Gen. G.A.; 1874; "The Northwest: The lands of Northern Pacific in Dakota and Montana.: Allegheny Evening Mail. Vol. VII No. 54.

De Smet, Pierre-Jean; 1905; Life, Letters and Travels of Father Pierre-Jean. De Smet, S.W. 1801-1873. Hiram M. Chittendon and A.T. Richardson, editors. Francis P. Harper: New York. pg 236.

De Smet, Pierre-Jean; 1905; Life, Letters and Travels of Father Pierre-Jean. De Smet, S.W. 1801-1873. Hiram M. Chittendon and A.T. Richardson, editors. Francis P. Harper: New York. pg 243.

De Smet, Pierre-Jean; 1905; Life, Letters and Travels of Father Pierre-Jean. De Smet, S.W. 1801-1873. Hiram M. Chittendon and A.T. Richardson, editors. Francis P. Harper: New York. pg 394-397.

Denig, Edwin Thompson; 1973; Five Indian Tribes of the Upper Missouri. John C. Ewers, editor. University of Oklahoma Press; Norman. Pg 139.

Dorn, Robert D.; 1984; Vascular Plants of Montana. Mountain West Publishing, Cheyenne, WY

Endangered Species Act, Section 7; 1973; Interagency Cooperation. 16 U.S.C. 1536.

Executive Order 11990; 1978; Protection of Wetlands. 3 C.F.R. 121.

Flath, D.; May 2000; Non-game Wildlife Biologist with MFWP. Personal Communication.

Forsyth, Lt. Col. James W. and Lt Col. F.D. Grant; 1875; Report of an Expedition up the Yellowstone River, Made in 1875. Government Printing Office: Washington. pp. 8-9, 14.

Forsyth, Lt. Col. James W. and Lt Col. F.D. Grant; 1875; Report of an Expedition up the Yellowstone River, Made in 1875. Government Printing Office: Washington.

Gibbon, Gen. John; 1877; "Last Summer's Expedition Against the Sioux and It's Great Catastrophe". American Catholic Quarterly Review. Vol. 11 pp 271-304.

Giddings, Brian; May 2000; MFWP Biologist. Personal Communication.

Gorges, Mark; 1995; Spring, "Where have the songbirds gone?", The Drumming Post, Wyoming Game and Fish Department, Volume 8, Number 2.

Hansen, Paul L.; Robert D. Pfister, Keith Boggs, Bradley J. Cook, John Joy, Dan K. Hinckley; 1995; May. Classification and Management of Montana's Riparian and Wetland Sites, Montana Forest and Conservation Experiment Station, School of Forestry, University of Montana, Missoula, Montana, Miscellaneous Publication No. 54.

Homer, J. Allen; 1932; A Trip to the States in 1865. Edith M. Duncan, editor. Historical Reprints: Sources of Northwest History No. 17. State University of Montana: Missoula. pp 8-9.

Hornaday, William T.; 1889; The Extermination of the American Bison. Report of National Museum, Smithsonian Institution. pp 368-548. Pp 539-540.

Irving, Washington; 1893; Adventures of Captain Bonneville. Peter Fenelon Colier, Publisher: New York. pg 313.

Linderman, Frank B. (editor); 1964; Plenty-coups: Chief of the Crows. Bison Books: Lincoln. pg 85.

Moisey, Neil, and Stephen F. McCool; 1991a; *Estimated Use and Economic Impact of the Proposed Visitor Center of the Upper Missouri*. Technical Completion Report 91-4. Missoula, Montana: Institute for Tourism and Recreation Research, University of Montana.

Montana Bald Eagle Working Group (MBEWG); 1991; Habitat Management Guide for Bald Eagles in Northwestern Montana. 29 pp.

Montana Department of Environmental Quality; June 2000; TMDL and 303(d) Website.

Montana Department of Agriculture, Montana Agricultural Statistics Service: 1995: *Montana Agricultural Statistics 1995*. Helena, Montana: Montana Agricultural Statistics Service.

Moulton, Gary E; The Journals of the Lewis and Clark Expedition. University of Nebraska Press, 1993.

Natural Resource Conservation Service, Soil Survey Information for Yellowstone County, MT.; Western Wetland Flora, Sacramento, CA.

Olendorf, R.R. et al.; 1981; Suggested Practices for Raptor Protection on Power Lines; The State of the Art in 1981. The Edison Electric Institute and The Raptor Research Foundation.

Peterson, Roger T.; 1961; Peterson Field Guide-Eastern Birds. Houghton Mifflin Company, Boston, MA.

Peterson, Roger T.; 1980; Peterson Field Guide-Eastern Birds. Houghton Mifflin Company, Boston, MA.

Poore, M.; May 2000; fisheries Biologist with MFWP. Personal Communication.

Quivey, Addison M.; 1902; The Yellowstone Expedition of 1874. Contributions to the Historical Society of Montana I: 236-250, pg. 238.

Quivey, Addison M.; 1902; The Yellowstone Expedition of 1874. Contributions to the Historical Society of Montana I: 236-250, pg. 233.

Raynolds, But. Brig. Gen. W.F.; 1868; Report on the Exploration of the Yellowstone River. Government Printing Office: Washington. pp 143-144.

Reed, P.B., Jr.; 1996; National List of Plant Species that Occur in Wetlands: Northwest (Region 9), and North Plains (Region 4). U.S. Fish and Wildlife Service. Biol. Rep.

Roe, Charles Francis; 1927; In Custers Last Battle. National Highways Association: New York.

Russell, Osborne; 1967; Journal of a Trapper 1834-1843. Aubrey L Haines, editor. Bison Books: Lincoln.

Shoenthal, N.; May 2000; Botanist. Personal Communication.

Stanley, Col. D.S.; 1874; Report on the Yellowstone Expedition of 1873. Government Printing Office; Washington D.C.

Stanley, Col. D.S.; 1874; Report on the Yellowstone Expedition of 1873. Government Printing Office; Washington D.C. pp 7,12.

Stebbins, R.C., 1985; A Field Guide to Western Reptiles and Amphibians, Houghton Mifflin Company. Boston, Mass. 336 pp.

Stuart James; 1902; The Yellowstone Expedition of 1863. Samuel T. Hauser and Granville Stuart, editors. Contributions to the Historical Society of Montana I: 132-205. pg. 157.

Stuart, Granville; 1977; Pioneering in Montana. Paul C. Phillips, editor. University of Nebraska Press; Lincoln.

Taylor, John E. and J.R. Lacey; 1994; Range Plants of Montana. Montana State University, Bozeman, MT.

Thwaites, Reuben Gold (editor); 1969; Original Journals of the Lewis and Clark Expedition. Arno Press: New York.

Topping, E.S.; 1968; Chronicles of the Yellowstone. Robert A. Murray, editor. Ross & Hanes, Inc. : Minneapolis.

U.S. Department of the Interior, Bureau of Land Management Riparian Area Management Process for Assessing Proper Functioning Condition, September, 1993, Technical Reference 1937-9, Service Center, 60 Pg.

1996; Environmental Assessment (Amendment) for the Billings Resource Management Plan; Pompeys Pillar. Miles City District, Montana. 100pp. With Appendices

U.S. Department of Interior, Bureau of Reclamation; July 1994; Montana Bald Eagle Management Plan (July 1994). Bureau of Reclamation, Montana Projects Office, Billings, MT.

U.S. Department of Interior, Fish and Wildlife Service, 1999; Endangered Species Act - Biological Assessment Workshop. Held December 14-15, Helena, MT. Unpublished workshop notes.

U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, Bureau of the Census. 1993. *1991 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation: Montana*. Washington, D.C.: U.S. Government Printing Office.

Wheeler, Olin D.; 1926; The Trail of Lewis and Clark, 1804-1904. G.P. Putnam's Sons: New York. pp. 350-352.

Whitaker, John O.; March 1996; National Audubon Society Field Guide to North American Mammals. Chanticleer Press, New York, NY.

White, William H.; ND Diary of William H White, 1876. Manuscript in possession of William Watt, Postmaster, Crow Agency [in 1966].

Whitson, Tom D. et al.; 1996; Weeds of the West. The Western Society of Weed Science/Western United States Land Grant Universities Cooperative Extension Services. University of Wyoming.

Wolf, C.; Ornithologist with Arrow Creek Ornithologists. List of Bird Species Observed at Pompeys Pillar National Historic Landmark.



THE SECRETARY OF THE INTERIOR
WASHINGTON



434463

Memorandum to the President

Date: December 21, 2000

From: Secretary Babbitt

Discussion of the Upper Missouri River Breaks National Monument Proposal

Attached is a draft proclamation, with an accompanying map,¹ to establish the Upper Missouri River Breaks National Monument in central Montana. This memorandum describes: (a) the basis for my recommendation that you establish the Upper Missouri River Breaks National Monument; (b) the draft proclamation; and (c) the resources, ownership patterns, and management issues present in the area. After careful review of the record, I am convinced that the objects satisfy the criteria for establishment of a national monument pursuant to the Antiquities Act, and that the boundaries of the land reserved represent the smallest area compatible with the proper care and management of those objects.

THE ANTIQUITIES ACT

Section 2 of the Antiquities Act, 16 U.S.C. 431, authorizes the President to establish as national monuments "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States...."

A. Objects of Historic or Scientific Interest

The proposed Upper Missouri River Breaks National Monument is in central Montana. The map appended to the draft proclamation sets out the boundaries of the land that would be reserved in the monument. The outer boundaries of the area encompass approximately 504,729 acres of land, approximately 377,346 acres of which are owned by the federal government and managed by the Bureau of Land Management (BLM). The draft proclamation attached to this memo

¹The boundaries of the proposed monument are drawn on the map entitled "Upper Missouri River Breaks National Monument," which would be attached to, and made a part of, your proclamation. It is not practicable, as of this date, to describe the boundaries of the land reserved as a part of the monument either by metes and bounds or by reference to designated subdivisions on official surveys shown on publicly recorded plats or maps. The BLM will produce a description conforming to the BLM Specifications for Descriptions of Tracts of Land for Use in Land Orders and Proclamations as soon as practicable should you decide to proceed.

describes objects in the area that warrant protection as a monument. Attachment A is a bibliography of the principal sources of information relied upon in making this recommendation.

The proposed Upper Missouri River Breaks National Monument contains a spectacular array of biological, geological, and historical objects of interest. From Fort Benton upstream into the Charles M. Russell National Wildlife Refuge, the proposed monument spans 149 miles of the Upper Missouri River, the adjacent Breaks country, and portions of Arrow Creek, Antelope Creek, and the Judith River. The area has remained largely unchanged in the nearly 200 years since Meriwether Lewis and William Clark traveled through it on their epic journey. In 1976, Congress designated the Missouri River segment and corridor in this area a National Wild and Scenic River (Pub.L. No. 94-486). The proposed monument also encompasses segments of the Lewis and Clark National Historic Trail, the Nez Perce National Historic Trail, and the Cow Creek Island Area of Critical Environmental Concern.

Lewis and Clark first encountered the Breaks country of the proposed monument on their westward leg. In his journal, Clark described the abundant wildlife of the area, including mule deer, elk, and antelope, and on April 29, 1805, the Lewis and Clark expedition recorded the first big horn sheep observation by non-Indians in North America. Lewis' description of the magnificent White Cliffs area on the western side of the proposed monument is especially vivid, and not just for his sometimes colorful spellings:

The hills and river Clifts which we passed today exhibit a most romantic appearance.... The bluffs of the river rise to hight of from 2 to 300 feet and in most places nearly perpendicular; they are formed of remarkable white sandstone which is sufficiently soft to give way readily to the impression of water...

The water in the course of time ... has trickled down the soft sand clifts and woarn it into a thousand grotesque figures, which with the help of a little immagination and an oblique view, at a distance are made to represent eligant ranges of lofty freestone buildings, having their parapets well stocked with statuary; collumns of various sculptures both grooved and plain, are also seen supporting long galleries in front of these buildings; in other places on a much nearer approach and with the help of less immagination we see the remains or ruins of eligant buildings; some collumns standing and almost entire with their pedestals and capitals; others retaining their pedestals but deprived by time or accident of their capitals, some lying prostrate an broken othe[r]s in the form of vast pyramids of conic structure bearing a serees of other pyramids on their tops..."

As we passed on it seemed as if those seens of visionary inchantment would never have and [an] end; for here it is too that nature presents to the view of the traveler vast ranges of walls of tolerable workmanship, so perfect indeed are those walls that I should have thought that nature had attempted here to rival the human art of masonry...

The proposed monument is covered with sedimentary rocks deposited in shallow seas that covered central and eastern Montana during the Cretaceous period. Glaciers, volcanic activity, and erosion have since folded, faulted, uplifted, and sculpted the landscape to the majestic form it takes today.

The area remains remote and nearly as undeveloped as it was in 1805. Many of the biological objects described in Lewis's and Clark's journals continue to make the proposed monument their home. The proposed monument boasts the most viable elk herd in Montana and one of the premier big horn sheep herds in the continental United States. It contains essential winter range for sage grouse as well as habitat for prairie dogs. Lewis sent Jefferson a prairie dog specimen which was, as Lewis noted at the time, "new to science." Abundant plant life along the River and across the Breaks country supports this wildlife. The lower reach of the Judith River, just above its confluence with the Missouri, contains one of the few remaining fully functioning cottonwood gallery forest ecosystems on the Northern Plains. Arrow Creek, originally called Slaughter River by Lewis and Clark, contains the largest concentration of antelope and mule deer in the proposed monument as well as important spawning habitat for the endangered pallid sturgeon. An undammed tributary to the Missouri River, Arrow Creek is a critical seed source for cottonwood trees for the flood plain along the Missouri.

The cliff faces in the proposed monument provide perching and nesting habitat for many raptors, including the sparrow hawk, ferruginous hawk, peregrine falcon, prairie falcon, and golden eagle. Several pairs of bald eagles nest along the River in the proposed monument and many others visit during the late fall and early winter. Shoreline areas provide habitat for great blue heron, pelican, and a wide variety of waterfowl. The River and its tributaries in the proposed monument host forty-eight fish species, including goldeye, drum, sauger, walleye, northern pike, channel catfish, and small mouth buffalo. The proposed monument has one of the six remaining paddlefish populations in the United States. The River also supports the blue sucker, shovel nose sturgeon, sicklefin, sturgeon chub, and the endangered pallid sturgeon.

The Bullwacker area of the proposed monument contains some of the wildest country on all the Great Plains, as well as important wildlife habitat. During the stress-inducing winter months, mule deer and elk move up to the area from the river area and antelope and sage grouse move down to the area from the benchlands. The heads of the coulees and breaks also contain archeological and historical sites, from teepee rings and remnants of historic trails to abandoned homesteads and lookout sites used by Meriwether Lewis.

Long before the time of Lewis and Clark, the area was inhabited by numerous native tribes, including the Blackfeet, Assiniboin, Gros Ventre (Atsina), Crow, Plains Cree, and Plains Ojibwa. The confluence of the Judith and Missouri Rivers was the setting for important peace councils in 1846 and 1855. In 1877, the Nez Perce crossed the Missouri and entered the Breaks country in their attempt to escape to Canada. The Cow Island Skirmish occurred in the Breaks and was the last encounter prior to the Nez Perce surrender to the U.S. Army at the Battle of Bear Paw just north of the proposed monument. Pioneers and the Army followed Lewis and Clark in the 1830s establishing Fort Piegan, Fort McKenzie, and Fort Benton. Remnants of this rich history are

scattered throughout the proposed monument, and the River corridor retains much of the same qualities and appearance today as it did then.

The area has been evaluated for its wilderness characteristics under the Federal Land Policy and Management Act of 1976, including the Cow Creek Wilderness Study Area (34,050 acres), Stafford Wilderness Study Area (4,800 acres), Ervin Ridge Wilderness Study Area (10,200 acres), Dog Creek South Wilderness Study Area (5,150 acres), Woodhawk Wilderness Study Area (8,100 acres), and Antelope Creek Wilderness Study Area (12,350 acres). Portions of these areas have been recommended as suitable for designation by Congress as wilderness, but no Congressional action has been. The documentation of this area assembled in the wilderness inventory and study process has identified many of the objects of scientific and historic interest within the proposed monument.

B. Land Area Reserved for the Proper Care and Management of the Objects to be Preserved

The Antiquities Act authorizes the President, as part of his declaration of a national monument, to reserve land, "the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected." 16 U.S.C. § 431. The area proposed for reservation has been carefully delineated, based on a thorough review of available information, to meet the goals of effectively caring for and managing the objects in perpetuity.

The area of the proposed monument includes biological, geological, archeological, and historic objects identified in the draft proclamation and in Attachment 1 accompanying this memorandum. The area is based on the conservation needs of these objects. Some of these objects, such as the geological resources, are present throughout the entire monument area. Others, such as the historical resources, are scattered throughout it. Many objects, such as the biological and geological, are found in conjunction with one another. Some of the objects identified depend on their location at various sites or elevations for their scientific value.

Preservation of such objects requires, among other things, protection of enough land surrounding them to maintain the relatively remote conditions that have made their preservation possible. Furthermore, the scientific value of many of the objects within the monument requires conservation of areas large enough to maintain the objects and their interactions. For example, species that exist because of the area's extraordinary geologic and environmental stability are distributed according to the geologic features to which they have adapted. Much of the biological and other scientific interest in the area results from the variety of geologic substrates across elevational gradients. Many species rely upon the entire area to maintain viable populations and their role in the ecosystem. Thus, protection of the aggregate area is necessary for proper care of the objects. Even if it were possible to disaggregate the area, management of a patchwork of reserved lands would be impractical, as it would make it more difficult to care for the objects, reduce options for natural resource management, and lead to inconsistent resource management standards for overlapping resources. Such a fragmentation of the proposed monument would endanger many of the objects, undermine the purposes of the monument itself,

and create substantial impediments to effective management of the monument. In short, our analysis indicates that reservation of a smaller area would undermine proper care and management of the monument.

LEGAL EFFECTS OF THE PROCLAMATION

There are several significant aspects of the draft proclamation. First, it would reserve only the federal lands in the area, because the Antiquities Act applies only to objects of historic or scientific interest “that are situated upon the lands owned or controlled by the Government of the United States.” 16 U.S.C. § 431.

Second, the draft proclamation would be subject to valid existing rights. Thus, to the extent a person or entity has valid existing rights in the federal lands or resources within the area, the proclamation would respect their rights. The exercise of such rights could, however, be regulated in order to protect the purposes of the monument.

Third, the draft proclamation appropriates and withdraws the federal lands and interests in lands within the boundaries of the monument from entry, location, sale, leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument. This withdrawal prevents the location of new mining claims under the 1872 Mining Law, and prevents the Secretary of the Interior from exercising discretion under the mineral leasing acts and related laws to lease or sell federal minerals within the boundaries of the proposed monument.

Fourth, waters of the Upper Missouri River through the monument area have already been reserved through Congress’s designation of the area as a component of the National Wild and Scenic River System in 1976. That federally reserved water right has been quantified through a compact entered into by the United States and the State of Montana in 1997 (see Montana Code Ann: 85-20-501). The water reserved in 1976 is generally sufficient for the purposes of this proclamation. Therefore, with two small exceptions, this proclamation makes no additional reservation of water. The two exceptions are in two small tributaries, the Judith River and Arrow Creek. These tributaries contain outstanding objects of biological interest that are dependent on water, such as a fully functioning cottonwood gallery forest ecosystem that is rare in the Northern Plains. Arrow Creek contains similar cottonwood resources. The reservation of water in 1976 may not be sufficient to protect the water flows in these two tributaries from diminution by new water appropriations upstream that could impair the objects of biological interest in these two tributaries identified in the proclamation. Therefore, the draft proclamation would reserve, as of the date of this proclamation and subject to valid existing rights, a quantity of water in the Judith River and Arrow Creek sufficient to fulfill the purposes for which the monument is established.

ADMINISTRATION OF THE MONUMENT

A. Management by the Bureau of Land Management

The federal lands in the area described in the attached draft proclamation are currently under the jurisdiction of the BLM in the Department of the Interior. BLM manages the land pursuant to its basic organic authorities, the primary one being the Federal Land Policy and Management Act of 1976 (FLPMA).

I believe the area is best left under BLM management, and the attached draft proclamation would have the Secretary of the Interior manage the proposed monument through this agency, under its existing authorities, but subject to the overriding purpose of protecting the objects described in the draft proclamation. The establishment of the monument thus constitutes an overlay on the management regime otherwise applicable to lands managed by the BLM. It limits the management discretion that the BLM would otherwise have by mandating protection of the historic and scientific objects within the national monument.

The inclusion of Wilderness Study Area lands within the proposed Upper Missouri River Breaks National Monument would have no effect on the Wilderness Study Area status or on any Congressional action to designate lands within the monument as wilderness. Congress has, in fact, many times in the past designated wilderness within existing national monuments. The Wilderness Act of 1964 serves some values (e.g., outstanding opportunities for solitude and primitive and unconfined recreation) that are not addressed in the Antiquities Act of 1906 which, as noted earlier, serves to protect "objects of historic or scientific interest." On the other hand, section 2(c) of the Wilderness Act expressly acknowledges that wilderness areas "may...contain ecological, geological, or other features of scientific, education...or historic value," and section 4(b) directs that wilderness areas "shall be devoted to the public purposes" of, among others, "scientific, educational, conservation, and historical use."

B. Impact of Monument Designation on Existing or Planned Activities in the Area

1. Currently permitted livestock grazing, recreation, hunting, and similar activities

Grazing, recreation, hunting, and other similar uses would generally not be affected except where: (1) the BLM, through processes required by existing law, identifies places where such uses ought to be restricted or prohibited as necessary to protect the federal lands and resources, including the objects protected by the monument designation; or (2) the BLM finds a clear threat from such a use to the federal lands and resources, including the objects protected by the proposed monument designation, and the circumstances call for swift protective action. Such uses would, of course, remain subject to applicable laws and regulations, and would therefore remain subject to regulation and limitation under such provisions for reasons other than establishment of the monument. Hunting and fishing would continue to be governed by applicable laws.

2. Use of existing rights-of-way (such as those established under Title V of FLPMA)

Use of existing rights-of-way would generally be subject to the same standards as described in section B.1. addressing currently permitted uses. Some existing rights-of-way may include valid existing rights. The exercise of such rights may be regulated in order to protect the purposes of the proposed monument, but any regulation must respect such rights.

3. Access

For purposes of protecting the objects it identifies, the draft proclamation would prohibit motorized and mechanized vehicle travel off road, except for authorized administrative or emergency purposes. The current management plans do not speak directly to road uses, although the extremely rugged terrain in part of the area is a limiting factor for this use. The draft proclamation directs the Secretary to develop a transportation plan that addresses road closures or travel restrictions as necessary to protect the objects identified in this proclamation.

4. Activities on private and state land

The area within the boundaries of the proposed monument contains approximately 37,435 acres of state land and 81,059 acres of private land. The monument designation would not apply to those lands, but the draft proclamation provides that if any state or private lands within the outer boundaries of the monument are acquired into federal ownership in the future, they would become part of the monument. In the absence of acquisition, the laws applicable to the use of state or private lands prior to establishment of the monument would continue to apply.

5. Oil and gas leases

Where possible, the proposed monument boundaries have been drawn to exclude existing mineral leases, but a little more than 15% of the area in the proposed monument, or a little more than 60,000 acres, is covered by existing federal oil and gas leases. These leases include a small portion of the LeRoy natural gas field that has been developed in the last few decades. About 155 wells have been drilled since 1960, and the area contains 19 producing wells. Valid existing rights as defined by the terms and conditions of these leases and applicable laws and regulations would not be affected by the proposed monument designation. The draft proclamation would direct the Secretary to manage the existing development, subject to these valid existing rights, so as not to create any new impacts that would interfere with the proper care and management of the objects protected by this draft proclamation. The draft proclamation would withdraw the proposed monument from further mineral leasing.

6. Mining Activity

The proposed monument contains 72 mining claims. To the extent these claims contain a valid discovery of a valuable mineral deposit as of the date of this designation, they would be respected as valid existing rights. The exercise of such rights may be regulated in order to protect the purposes of the proposed monument, but any regulations must respect such rights. Existing mining claims that lack a valid discovery of a valuable mineral deposit have no valid existing rights; activities on such claims may be regulated or prohibited to protect the purposes of the proposed monument. New mining claims would be prohibited as the draft proclamation withdraws the area from the 1872 Mining Law.

CONCLUSION

Establishing the Upper Missouri River Breaks National Monument would be an exemplary exercise of Presidential authority under the Antiquities Act, well in keeping with past practice through which many notable objects of historic and scientific interest have been preserved, to the Nation's great and lasting benefit. I strongly recommend you sign the proclamation.

A handwritten signature in black ink, appearing to read "B. B. M. A.", is positioned above the title. The signature is stylized and cursive.

The Secretary of the Interior

DRAFT

Presidential Proclamation #####

Establishment of the Upper Missouri River Breaks National Monument

By the President of The United States of America

A PROCLAMATION

The Upper Missouri River Breaks National Monument contains a spectacular array of biological, geological, and historical objects of interest. From Fort Benton upstream into the Charles M. Russell National Wildlife Refuge, the monument spans 149 miles of the Upper Missouri River, the adjacent Breaks country, and portions of Arrow Creek, Antelope Creek, and the Judith River. The area has remained largely unchanged in the nearly 200 years since Meriwether Lewis and William Clark traveled through it on their epic journey. In 1976, Congress designated the Missouri River segment and corridor in this area a National Wild and Scenic River (Pub.L. No. 94-486). The monument also encompasses segments of the Lewis and Clark National Historic Trail, the Nez Perce National Historic Trail, and the Cow Creek Island Area of Critical Environmental Concern.

Lewis and Clark first encountered the Breaks country of the monument on their westward leg. In his journal, Clark described the abundant wildlife of the area, including mule deer, elk, and antelope, and on April 29, 1805, the Lewis and Clark expedition recorded the first big horn sheep observation by non-Indians in North America. Lewis' description of the magnificent White Cliffs area on the western side of the monument is especially vivid, and not just for his sometimes colorful spellings:

The hills and river Clifts which we passed today exhibit a most romantic appearance.... The bluffs of the river rise to hight of from 2 to 300 feet and in most places nearly perpendicular; they are formed of remarkable white sandstone which is sufficiently soft to give way readily to the impression of water...

The water in the course of time ... has trickled down the soft sand clifts and woarn it into a thousand grotesque figures, which with the help of a little immagination and an oblique view, at a distance are made to represent eligant ranges of lofty freestone buildings, having their parapets well stocked with statuary; collumns of various sculptures both grooved and plain, are also seen supporting long galleries in front of these buildings; in other places on a much nearer approach and with the help of less immagination we see the remains or ruins of eligant buildings; some

DRAFT

Presidential Proclamation #####

Establishment of the Upper Missouri River Breaks National Monument

By the President of The United States of America

A PROCLAMATION

The Upper Missouri River Breaks National Monument contains a spectacular array of biological, geological, and historical objects of interest. From Fort Benton upstream into the Charles M. Russell National Wildlife Refuge, the monument spans 149 miles of the Upper Missouri River, the adjacent Breaks country, and portions of Arrow Creek, Antelope Creek, and the Judith River. The area has remained largely unchanged in the nearly 200 years since Meriwether Lewis and William Clark traveled through it on their epic journey. In 1976, Congress designated the Missouri River segment and corridor in this area a National Wild and Scenic River (Pub.L. No. 94-486). The monument also encompasses segments of the Lewis and Clark National Historic Trail, the Nez Perce National Historic Trail, and the Cow Creek Island Area of Critical Environmental Concern.

Lewis and Clark first encountered the Breaks country of the monument on their westward leg. In his journal, Clark described the abundant wildlife of the area, including mule deer, elk, and antelope, and on April 29, 1805, the Lewis and Clark expedition recorded the first big horn sheep observation by non-Indians in North America. Lewis' description of the magnificent White Cliffs area on the western side of the monument is especially vivid, and not just for his sometimes colorful spellings:

The hills and river Clifts which we passed today exhibit a most romantic appearance.... The bluffs of the river rise to hight of from 2 to 300 feet and in most places nearly perpendicular; they are formed of remarkable white sandstone which is sufficiently soft to give way readily to the impression of water...

The water in the course of time ... has trickled down the soft sand clifts and woarn it into a thousand grotesque figures, which with the help of a little immagination and an oblique view, at a distance are made to represent eligant ranges of lofty freestone buildings, having their parapets well stocked with statuary; collumns of various sculptures both grooved and plain, are also seen supporting long galleries in front of these buildings; in other places on a much nearer approach and with the help of less immagination we see the remains or ruins of eligant buildings; some

columns standing and almost entire with their pedestals and capitals; others retaining their pedestals but deprived by time or accident of their capitals, some lying prostrate and broken others in the form of vast pyramids of conic structure bearing a series of other pyramids on their tops..."

As we passed on it seemed as if those scenes of visionary enchantment would never have and [an] end; for here it is too that nature presents to the view of the traveler vast ranges of walls of tolerable workmanship, so perfect indeed are those walls that I should have thought that nature had attempted here to rival the human art of masonry...

The monument is covered with sedimentary rocks deposited in shallow seas that covered central and eastern Montana during the Cretaceous period. Glaciers, volcanic activity, and erosion have since folded, faulted, uplifted, and sculpted the landscape to the majestic form it takes today.

The area remains remote and nearly as undeveloped as it was in 1805. Many of the biological objects described in Lewis's and Clark's journals continue to make the monument their home. The monument boasts the most viable elk herd in Montana and one of the premier big horn sheep herds in the continental United States. It contains essential winter range for sage grouse as well as habitat for prairie dogs. Lewis sent Jefferson a prairie dog specimen which was, as Lewis noted at the time, "new to science." Abundant plant life along the River and across the Breaks country supports this wildlife. The lower reach of the Judith River, just above its confluence with the Missouri, contains one of the few remaining fully functioning cottonwood gallery forest ecosystems on the Northern Plains. Arrow Creek, originally called Slaughter River by Lewis and Clark, contains the largest concentration of antelope and mule deer in the monument as well as important spawning habitat for the endangered pallid sturgeon. An undammed tributary to the Missouri River, Arrow Creek is a critical seed source for cottonwood trees for the flood plain along the Missouri.

The cliff faces in the monument provide perching and nesting habitat for many raptors, including the sparrow hawk, ferruginous hawk, peregrine falcon, prairie falcon, and golden eagle. Several pairs of bald eagles nest along the River in the monument and many others visit during the late fall and early winter. Shoreline areas provide habitat for great blue heron, pelican, and a wide variety of waterfowl. The River and its tributaries in the monument host forty-eight fish species, including goldeye, drum, sauger, walleye, northern pike, channel catfish, and small mouth buffalo. The monument has one of the six remaining paddlefish populations in the United States. The River also supports the blue sucker, shovel nose sturgeon, sicklefin, sturgeon chub, and the endangered pallid sturgeon.

The Bullwacker area of the monument contains some of the wildest country on all the Great Plains, as well as important wildlife habitat. During the stress-inducing winter months, mule deer and elk move up to the area from the river and antelope and sage grouse move down to the area from the benchlands. The heads of the coulees and breaks also contain archeological and

historical sites, from teepee rings and remnants of historic trails to abandoned homesteads and lookout sites used by Meriwether Lewis.

Long before the time of Lewis and Clark, the area was inhabited by numerous native tribes, including the Blackfeet, Assiniboin, Gros Ventre (Atsina), Crow, Plains Cree, and Plains Ojibwa. The confluence of the Judith and Missouri Rivers was the setting for important peace councils in 1846 and 1855. In 1877, the Nez Perce crossed the Missouri and entered the Breaks country in their attempt to escape to Canada. The Cow Island Skirmish occurred in the Breaks and was the last encounter prior to the Nez Perce surrender to the U.S. Army at the Battle of Bear Paw just north of the monument. Pioneers and the Army followed Lewis and Clark in the 1830s establishing Fort Piegan, Fort McKenzie, and Fort Benton. Remnants of this rich history are scattered throughout the monument, and the River corridor retains much of the same qualities and appearance today as it did then.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431) authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

WHEREAS it appears that it would be in the public interest to reserve such lands as a national monument to be known as the Upper Missouri River Breaks National Monument:

NOW, THEREFORE, I, William J. Clinton, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. § 225, 16 U.S.C. § 431), do proclaim that there are hereby set apart and reserved as the Upper Missouri River Breaks National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Upper Missouri River Breaks National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 377,346 acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument.

The establishment of this monument is subject to valid existing rights. The Secretary of the Interior shall manage development on existing oil and gas leases within the monument, subject to

valid existing rights, so as not to create any new impacts that would interfere with the proper care and management of the objects protected by this proclamation.

The Secretary of the Interior shall prepare a transportation plan that addresses the actions, including road closures or travel restrictions, necessary to protect the objects identified in this proclamation.

For the purpose of protecting the objects identified above, the Secretary shall prohibit all motorized and mechanized vehicle use off road, except for emergency or authorized administrative purposes.

Lands and interests in lands within the proposed monument not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States.

The Secretary of the Interior shall manage the monument through the Bureau of Land Management, pursuant to applicable legal authorities, to implement the purposes of this proclamation.

Because waters of the Upper Missouri River through the monument area have already been reserved through Congress's designation of the area as a component of the National Wild and Scenic River System in 1976, this proclamation makes no additional reservation of water, except in two small tributaries, the Judith River and Arrow Creek. These tributaries contain outstanding objects of biological interest that are dependent on water, such as a fully functioning cottonwood gallery forest ecosystem that is rare in the Northern Plains. Therefore, there is hereby reserved, as of the date of this proclamation and subject to valid existing rights, a quantity of water in the Judith River and Arrow Creek sufficient to fulfill the purposes for which this monument is established. Nothing in this reservation shall be construed as a relinquishment or reduction of any water use or rights reserved or appropriated by the United States on or before the date of this proclamation.

Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction of the State of Montana with respect to fish and wildlife management.

Nothing in this proclamation shall be deemed to enlarge or diminish the rights of any Indian tribe.

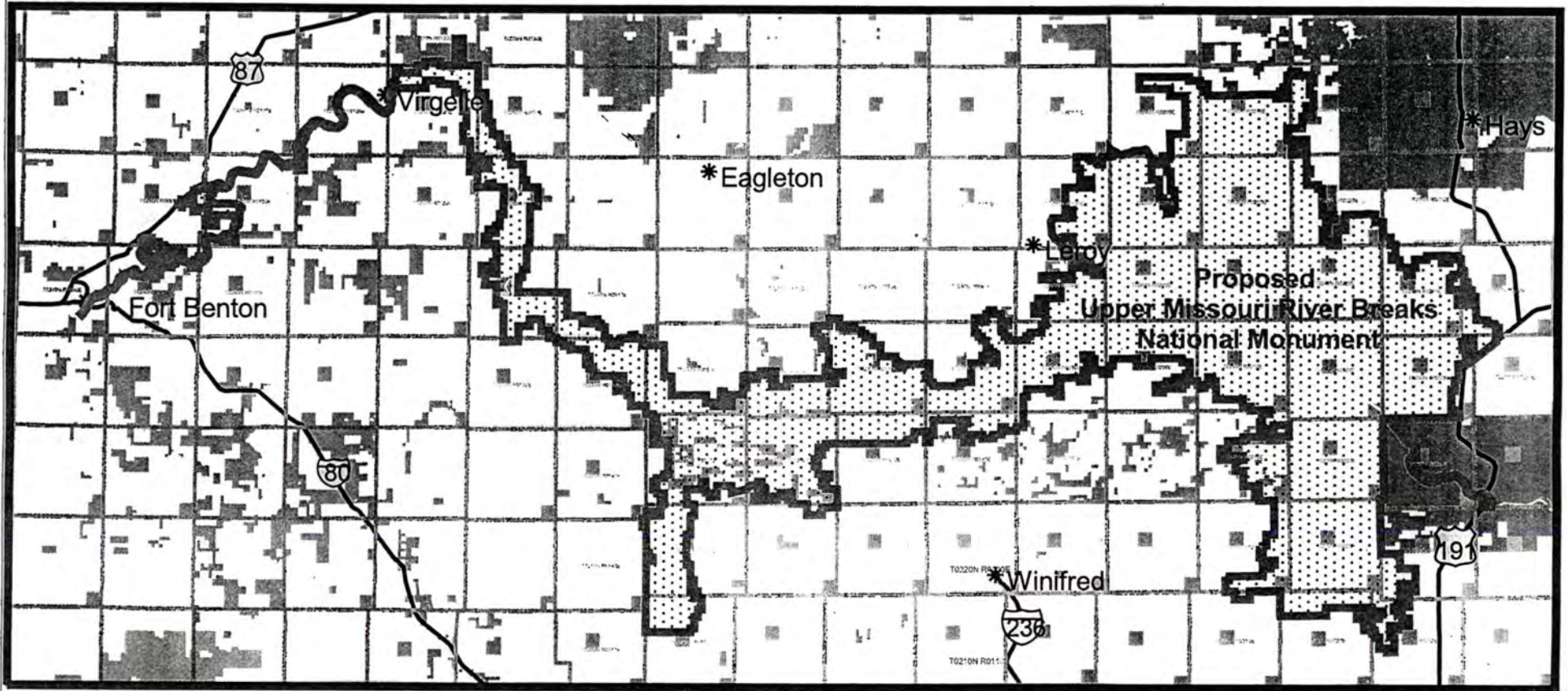
Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing permits or leases on all lands under its jurisdiction shall continue to apply with regard to the lands in the monument.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this XX day of December, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fifth.

William J. Clinton



Proposed Upper Missouri River Breaks National Monument

 Boundary

Land Status
BLM

 National Forest

 National Wildlife Refuge

 Indian Lands

 State

 Private

Scale 1:650,000



December 13, 2000

Bibliography
Proposed Upper Missouri River Breaks National Monument

1845. Inventory of Goods on Hand at Fort F.A.C., April 5, 1845. Manuscripts Department, Missouri Historical Society, St. Louis, Missouri. Copy held by Historical Associates, Missoula, Montana.

1862. List of Arrivals, Steamboats in Fort Benton. *Contributions to the Montana Historical Society, vol. I*. J.S. Canner, Boston.

1928. Early History of Northern Montana and Chouteau County. Montana Historical Society, Helena.

1953. *The Journals of Lewis & Clark*. Houghton Mifflin Company, Boston.

1973. Inventory and Evaluation of Historic Sites. MS for Montana Department of Fish and Game.

1974. Camp Cooke (1866-1870): Historic Site Salvage Archaeology. *Archaeology in Montana* 15(3):41-46.

Abel, A.H., ed., 1932. *Chardon's Journal at Fort Clark, 1834-1839*. Iowa City, Iowa.

Adamczyk, 1975. Archeological Inventory Missouri River Reach Between Fort Benton and Sioux City. Corps of Engineers, Department of the army, Omaha District, Omaha.

Aldrich, B.S., 1942. *The Lieutenant's Lady*. Appleton, New York.

Allen, I.I., 1862. From St. Louis to Fort Benton in 1862. Microfilm 63. Montana Historical Society, Helena.

Allen, J.L., 1941. *Passage Through the Garden: Lewis and Clark and the Image of the American Northwest*. University of Illinois Press, Chicago.

Alt, D. and D. Hyndman, 1986. *Roadside Geology of Montana*. Mountain Press, Missoula.

Anonymous n.d. *Progressive Men of the State Of Montana*. A. W. Bower & Co., Chicago.

1869a. Untitled. *Helena Weekly Herald*, April 1, 1869, Montana Historical Society.

1869b. Untitled. *Helena Daily Herald*, September 2, 1869, Montana Historical Society.

1987. Untitled. *Benton Record*. Fort Benton.
1880. Untitled. *River Press*, Fort Benton..
1899. *Society of Montana Pioneers*. 10 vol. Werner Co., Akron.
1975. *Hoofprints of the Yellowstone Corral of Westerners*, 5(1):6, Billings.
- Archaeological and Historical Sites Survey, P-N Bridge Area, Missouri Wild and Scenic River.
- Archibald, J.D., 1982. A study of mammalia and geology across the Cretaceous-Tertiary boundary in Garfield County, Montana. University of California Publications in Science, v. 122.
- Atkins, C. J., 1908. Logs of Missouri River Steamboats. *Collections of the State Historical Society of North Dakota*, vol. II. Bismarck.
- Audubon, M.R. ed., 1898. *Audubon and His Journals*. 2 vol.
- Barrows, T.E., 1981. *Homestead Days*. Brownstone Books, Chicago.
- Beal, M., 1963. *I Will Fight No More Forever*. University of Washington, Seattle.
- Biggs, 1989. Chandler River History Digest, DOI, BLM, Lewiston District. Report on file. MT BLM Curation Facility, Billings.
- Biggs, C. and G.E. Monahan, 1997. *Montana's Wild and Scenic Upper Missouri River, History Digest*. On file, USDI-BLM, Lewistown Field Office, Lewistown, Montana.
- Bradley, Lieutenant J.H., 1900. *Affairs at Fort Benton From 1831 to 1869*. Contributions to the Historical Society of Montana, vol. III, Helena.
1917. "Establishment of Fort Piegan as Told Me by James Kipp." *Contributions to the Historical Society of Montana*, vol 8, Helena.
- Brower, J.V., 1896. *The Missouri River and Its Utmost Source*. Pioneer Press, St. Paul, Minnesota.
- Brown, M.H., 1967. *Flight of the Nez Perce*. Putnam, New York.
- Burlingame, M.G. and K.R. Toole, 1957. *A History of Montana*. 3 vol. Lewis, New York.
- Canfield, A.N. and S.E. Canfield, 1868. *Papers, 1866-1868*. Microfilm 73. Montana Historical Society, Helena.

Chittenden, H.M., 1903. *History of Steamboat Navigation of the Missouri River*. 2 vol. Francis P. Harper, New York.

Chittenden, H.M. and A.T. Richardson, 1905. *Life, Letters and Travels of Father Pierre Jean DeSmet, 1801-1873*. 4 vol. Harper's, New York.

Chittenden, H.M. and P.C. Phillips, 1902. *The American Fur Trade of the Far West*. 3 vol. Harper's, New York.

Cobban, R.M., 1880. *Diary of a Trip to Montana*. Small Collections 348. Montana Historical Society, Helena.

Conner, 1989. Protohistoric Horse Petroglyphs in Eagle creek Canyon. In *Cultural Succession of the Hoffer Site (24CH669) and Eagle Creek Confluence, Upper Missouri National Wild and Scenic River, North-Central Montana High Plains*, compiled and edited by Davis with Aaberg, Conner, Davis, Fisher, Karsmizki, and Ottersburg, contributors. DOI, BLM, Lewiston District, Lewistown, MT.

Coues, E., 1893. *History of the Expedition Under the Command of Lewis and Clark*. 4 vol. Francis P. Harper, New York.

Curtis, S.W. and D. Conklin, 1975. Judith Landing National Historic District. State Historic Preservation Office, Montana Historical Society, Helena.

Cushman, D., 1962. Monsters of the Judith. *Montana, the Magazine of Western History*. 12(4):18-36.

Cutright, P.R., 1976. *A History of the Lewis and Clark Journals*. University of Oklahoma Press, Norman.

Davis, L., 1965. Preliminary Report on North-Central Montana Archaeology. *Archaeology in Montana*, 6(2): 3-10.

Davis, L.B., 1976. *Missouri River Breaks Area Archaeological and Historical Values - Montana*. Bureau of Land Management, Billings, Montana.

Davis, L., ed., 1989. Cultural Succession at the Hoffer Site (24CH669) and Eagle Creek Confluence, Upper Missouri Wild and Scenic River, North Central Montana High Plains. *Archaeology in Montana*. 30(1 & 2):1-183.

Davis, 1990. The Thompson Bottom Site (24CH452) in North Central Montana Prehistory, DOI, BLM, Lewistown District, Lewistown, MT.

Davis, L., and S. Aaberg, 1978. *Upper Missouri Wild and Scenic River Followup Cultural Resources Investigation*. Montana State University, Bozeman.

Davis, L., S. Aaberg, M. Wilson, and R. Ottersberg, 1982. Floodplain Archaeology at the Holmes Terrace Site (24FR62), Fergus County, Montana. *Archaeology in Montana* 23(2):1-151.

Davis, L., and J. Fisher, 1989. The Prehistoric and Aboriginal Utilization of Pronghorn Antelope: Lost Terrace Site (24CH68) Prehistory in Western North American Macroperspective. Draft manuscript on file, USDI-BLM, Lewistown Field Office, Lewistown, Montana.

Davis, L., and J. Fisher, 1989a. A Late Prehistoric Model for communal Utilization of Pronghorn Antelope in the Northwestern Plains Region, North America. In *Hunters of the Recent Past*, edited by Davis and Reeves. Unwin Hyman, London.

Davis, L., and E. Stallcop, 1965. The Keaster Site (24PH401): A Stratified Bison Kill Occupation in the Missouri Breaks Area of North Central Montana. *Archaeology in Montana*, Memoir #2: 1-27.

Dawson, A., 1855. Letter to Pierre Chouteau, October 10, 1855, Judith River. Pierre Chouteau Collection, Missouri Historical Society, St. Louis.

Deaver, 1986. *American Indian Religious Freedom Act Background Data*. DOI, BLM, Montana State Office, Billings, MT.

Denig, E.T., (J.C. Ewers, ed.), 1961. *Five Indian Tribes of the Upper Missouri*. University of Oklahoma Press, Norman.

DeSmet, P.J., 1847. *Oregon Mission and Travels Over the Rock Mountains in 1845-46*. Edw. Dunigan, New York.

DeVoto, B., 1947. *Across the Wide Missouri*. Bonanza Books, New York.

Donnelly, J.P., Translator, 1967. *Wilderness Kingdom; Indian Life in the Rocky Mountains, 1840-1847. The Journals & Paintings of Nicholas Point, S.J.* New York.

Dusenberry, V., 1957. Development of Montana's Indians. In *History of Montana*, 3 vol. By M. Burlingame and K.R. Toole, Lewis, New York.

Eide, I.H., 1969. *American Odyssey. The Journey of Lewis & Clark*. Rand McNally.

Ewers, J.C., 1958. *The Blackfeet: Raiders on the Northwestern Plains*. University of Oklahoma Press, Norman.

- Ewers, J.C., ed., 1961. *Edwin Thompson Denig; Five Indian Tribes of the Upper Missouri*. University of Oklahoma Press, Norman.
- Ewers, J.C., 1968. *Indian Life on the Upper Missouri*. University of Oklahoma Press, Norman.
- Fahey, J., 1974. *The Flathead Indians*. University of Oklahoma, Norman.
- Fine, H.L., n.d. *Montana Territorial Post Offices, 1884-1889*. Montana Historical Society, Helena.
- Fischer, C. and H. Fischer, 1995. *Montana Wildlife Viewing Guide*.
- Flandrau, G., 1974. *Frontier Days Along the Upper Missouri*, (reprint of Great Northern Railway publication) Shorey Book Store, Seattle.
- Fletcher, R.S., 1929. The End of the Open Range in Eastern Montana. *Mississippi Valley Historical Review* 16:188:211.
- Foor, 1973. The Montana Statewide Archaeological Data retrieval System. *Archaeology in Montana* 14(2):44-48.
- Frazer, R.M., 1865. *Diary. Steamboat papers*, Missouri Historical Society, St. Louis.
- Gardner, B., 2000. Fisheries Biologist, Montana Fish Wildlife and Parks; Personal Communication.
- Garraghan, G. J., ed., 1931. A Journey in a Barge on the Missouri From the Fort of the Blackfeet (Lewis) to That of the Assiniboines (Union). *Mid-America* 13(3). Chicago.
- Geraldine History Committee, 1976. *Spokes, Spurs and Cockleburs*. The River Press Publishing Company, Fort Benton, Montana.
- Goetzmann, W.H., 1979. *Army Exploration in the American West, 1803-1863*. University of Nebraska Press, Lincoln.
- Gregg, 1977. *Cultural Resource Inventory and Evaluation in the South Bearpaw Planning Unit, Montana* (2 vols.). DOI, BLM, Montana State Office, Billings.
- Greiser, 1984. Further Analysis of Bison and Canid Remains from the Thompson Bottom Site (24CH52), Montana. Report submitted to the DOI, BLM, Lewistown District. (On file at Montana BLM Curation Facility, Billings).
- Hafen, L.R., ed., 1965. *The Mountain Men and the Fur Trade of the Far West*, 10 vol. Glendale, California.

Halsey, J., 1837. Letter to Pierre Chouteau, St. Louis from Fort Pierre, Nov. 2 Pierre Chouteau Collection, Missouri Historical Society, St. Louis.

Hansen and Phister, 1990. *Inventory and Classification of Eastern Montana Riparian Communities*.

Hanson, J.M., 1946. *The Conquest of the Missouri*. Murray Hill, New York.

Harkness, J., 1861. Diary, St. Louis to Fort Benton. *Contributions to the Montana Historical Society*, vol. II. J.S. Canner, Boston.

Hart, H.M., 1963. *Old Forts of the Northwest*. Superior Publishing Co., Seattle.

Hatch, E.A.C., 1857. Annual Report of the Blackfeet Agency, 1856. *Report of the Commissioner of Indian Affairs*, for the Year 1856. Washington.

Hazard, J.T., 1952. *Companion of Adventure*, Binfords, Portland.

Hearn Jr., B.C., 1989. Alkalic ultramafic magmas in north-central Montana, USA: Genetic connections of alonite, kimberlite, and carbonatite, in *Kimberlites and Related Rocks - Volume 1: Their Composition, Occurrence, Origin, and Emplacement*, Geol. Soc. Australia, Spec. Publ. 14, pp. 109-119.

Hearn Jr., B.C., 1979. Preliminary map of diatremes and alkalic ultramafic intrusions in the Missouri River Breaks and vicinity, north-central Montana: U.S. Geological Survey Open-File Report. 79-1182, scale 1:125,000

Hewitt, J.N.B., ed., 1930. Indian Tribes of the Upper Missouri, by Edwin Thompson Denig. *Forty-sixth Annual Report of the Bureau of American Ethnology*. Washington.

Hilger, D., n.d. Early History of Fergus County. Montana Historical Society, Helena.

History Digest, Upper Missouri National Wild and Scenic River, 1982.

Hogan, M.E., 1874. Letters Written to Andrew O'Connell of Helena From Camp Cooke, 1866-1874. Montana Historical Society, Helena.

Holabird, S.B., 1869. Report. Executive Document 8, Senate Report Serial 1440, 41st U.S. Congress, 3rd Session. Montana Historical Society, Helena.

Horner, J.R., 1988. A new hadrosaur (Reptilia, Ornithischia) from the Upper Cretaceous Judith River Formation of Montana: *Journal Vertebrate Paleontology*, v. 8, no. 3, p. 314-21.

Horner, J.R., 1979. Upper Cretaceous dinosaurs from the Bearpaw Shale (marine) of south-central Montana with a checklist of Upper Cretaceous dinosaur remains from marine sediments in North America; *Journal of Paleontology*, v. 53, no. 3, p. 566-577.

Hosmer, J.K., ed., 1904. *Gass's Journal of the Lewis and Clark Expedition*. A. McClurge & Co., Chicago.

Howard and Curtis, compilers and Gregg and Albert, editors, 1978. Archaeological and Historic Site Survey, PN Bridge Area, Missouri Wild and Scenic River. *Mineral Research Center Cultural Resources Division Reports of Investigations 9*. Contract T-950-CT7-2400. Report to the DOI, BLM, Lewistown District, Lewistown, MT.

Intermodal Surface Transportation Efficiency Act, Section 1047. 1991; Bureau of Land Management Manual H-8357-1.

Kane, P., 1968. *Wanderings of an Artist Among the Indians of North America*. Rutland, Vermont.

Knudson, R., 1992. Upper Missouri Wild and Scenic River, Cultural Resource Management Plan. On file, USDI-BLM, Lewistown Field Office, Lewistown, Montana.

Koury, M.J., 1970. *Military Posts of Montana*. Old Army Press, Bellevue, NB.

LaBarge, A.G., Untitled manuscript. Missouri Historical Society, St. Louis.

Larpenteur, C., 1898. *Forty Years a Fur Trader on the Upper Missouri*. 2 vol. Edited by E. Coues. Francis P. Harper, New York.

Lass, W.E., 1962. *History of Steamboating on the Upper Missouri*. University of Nebraska, Lincoln.

Leeson, M.A., ed., 1886. *History of Montana, 1739-1885*. Warner, Beers & Co., Chicago.

Lepley, J.G., 1981. *Luxury Living Along the Levee: Frontier Homes in Fort Benton*, River Press Publishing Company, Fort Benton.

Ludwickson, Blakeslee, and O'Shea, 1987. Missouri National Recreational River: Native American Cultural Resources. *Wichita State University Publications in Anthropology*, No. 3.

Lutz, D. and M. Lutz, 1975. *Montana Postal Cache: Montana Post Offices, 1984-1974*. Montana Historical Society, Helena.

Mallory, O.L., 1963. An Archaeological Appraisal of the Missouri Breaks Region in Montana; A Project of the Inter-Agency Archaeological and Paleontological Salvage Program. Midwest Archeological Center, Lincoln, NB.

Malone, M.P. and R.B. Roeder, 1976. *Montana: A History of Two Centuries*. University of Washington Press, Seattle.

Marsh, 1890. *Lewis & Clark Journals*, 1985.

Mattison, R.H., 1953. *An Army Wife on the Upper Missouri: The Diary of Sarah Canfield, 1866-1868*. North Dakota History 20(4):191-220.

1954. "The Army Post on the Northern Plains, 1865-1885." *Nebraska History* 35(1). (March 1954).

1956. "The military frontier on the upper Missouri." *Nebraska History* 37(3). (Sept. 1956).

McDonnell, A., 1940. "Notes and References, on Fort Benton, Alexander Culbertson, Fort McKenzie, and F.A. Chardon." *Contributions to the Historical Society of Montana*, vol. 10. Helena.

McWhorter, L.V., 1952. *Hear Me, My Chiefs!* The Caxton Printers, Caldwell, Idaho.

Miller and Cohen, 1978. *Military and Trading Posts in Montana*. Pictorial Histories Publishing Co., Missoula, MT.

Missouri Historical Society, 1866. Log of the *Lillie Marlin*, 1865-1866. Roper Collection, Missouri Historical Society, St. Louis.

Missouri River Commission, 1892-1895. Map sheet no. LXXIII. *Map of the Missouri River From its Mouth to Three Forks; Montana*. Washington.

Mitchell, D., 1837. Letter to P.D. Papin, from Fort Union, December 1, 1837. Pierre Chouteau Collection, Missouri Historical Society, St. Louis.

Montana Historical Society, n.d. T.C. Power Collection. Montana Historical Society, Helena.

Mueller, G.D., 1973. Historic Spots at the Mouth of the Judith. *Lewistown News-Argus*, Christmas edition.

Mueller, O.O., 1964. Ridding the Range of Renegades. In *Cowboys and Cattlemen*, edited by M.S. Kennedy. Hastings House, New York.

Mulloy, W., 1958. A preliminary Historical Outline for the Northwestern Plains. *University of Wyoming Publications* 22 (1):1-235. Laramie.

Murray, R.A., 1968. *Montana Historical Sites Inventory*. Montana Fish and Game.

National Archives:

Record Group 92. List of Civilians, Citizens, Attaches, Camp Followers, Traders and Others. Camp Cooke, March 31, 1868. Washington, D.C.

Record Group 98. Records of the United States Army Commands (Army Posts), Camp Cooke, Montana, 1866-69. Washington, D.C.

Record Group 393. List of Interments, National Cemetery, Camp Cooke. Washington, D.C.

Microfilm Group 94. Records of the Adjutant General's Office, Medical Histories of the Posts, Camp Cooke, vol. 15. Washington, D.C.

Microfilm 617. Returns from U.S. Military Posts, Role 252, Camp Cooke 1866-1870. Washington, D.C.

National Register of Historic Places: Nomination Forms. On file, USDI-BLM, Lewistown Field Office, Lewistown, Montana.

- Dauphin Rapids Historic District, 1975
- Judith Landing Historic District, 1968.
- White Rocks Historic District, 1968.

Neihardt, J.G., 1910. *The River and I.G.P.* Putnam's Sons, New York.

Oglesby, R.E., 1963. *Manuel Lisa and the Opening of the Missouri Fur Trade*. University of Oklahoma, Norman.

Okey, P., 1982. *Middle Montana; A Historical Overview*. Manuscript on file, USDI-BLM, Lewistown Field Office, Lewistown, Montana.

Osborn, H.F., 1931. *Cope: Master Naturalist*. Princeton University Press, Princeton.

Osborn, N.W., 1870. Letter to commanding officer from Lt. N.W. Osborn, Ft. Benton, February 10, 1870, on moving of troops and equipment from Camp Cooke and the abandonment of the latter post. In *Official letters and reports of army officials and Indian agents relating to affairs in Montana, 1867-1875*, by J.H. Bradley. Montana Historical Society, Helena.

Ottersberg, 1985. A Pedologic Investigation of the Thompson Bottom Archaeological Site and Comparison with Two Other Terrace Sites along the Post-Glacial Missouri River Channel of North Central Montana. Report to the DOI, BLM, Lewistown district, Lewistown, MT. (On file, Montana BLM Curation Facility, Billings).

Overholzer, 1987. *Fort Benton - World's Innermost Port - Stafford and Virgelle Ferries*.

Partoll, A.J., ed., 1937. Blackfoot Indian Peace Council. *Frontier and Midland* 17:199-207. Missoula.

Perry, E.S., 1962. Montana in the geologic past: Montana Bureau of Mines and Geology Bulletin 26.

Phillips, P.C., 1962. *Medicine in the Making of Montana*. MSU Press, Bozeman.

Phillips, P.C., 1961. *The Fur Trade*, 2 vol. University of Oklahoma Press, Norman.

Point, N., 1967. *Wilderness Kingdom*. Holt, Rinehart and Winston, New York.

Porter, M.W., 1949. *The Surgeon in Charge*. Rumford Press, Concord, NH.

Public Law 94-486, October 12, 1976.

Quaife, M.M., ed., 1916. *The Journals of Captain Meriwether Lewis and Sgt. John Ordway Kept on the Expedition of Western Exploration, 1803-1805*. State Historical Society of Wisconsin, Madison.

Quaife, M.M., ed., 1933. *Forty Years a Fur Trader on the Upper Missouri*. Lakeside Classics Series. Chicago.

Rogers, R., Local Peregrine Coordinator; Personal Communication.

Ruebelmann, 1983. Cultural Resources Inventory of the BLM Land Exchange Pooling Project in the Lewistown District: Phase 1. Report on file, DOI, BLM, Lewistown District.

Ruebelmann, 1983. An Overview of the Archaeology and Prehistory of the Lewistown BLM District, Montana. *Archaeology in Montana* 24(3).

Russell, O., 1921, *Journal of a Trapper or Nine Years in the Rocky Mountains, 1834-1843*. Boise.

Schmitt, M., ed., 1946. "From Missouri to Oregon in 1860; the Diary of August V. Kautz." *Pacific Northwest Quarterly* 27(3). (July 1946).

Schulz, J.W., 1979. *Floating on the Missouri*. University of Oklahoma Press, Norman (Forest and Stream, 1902).

Sharp, P.F., 1973. *Whoop-Up Country*. University of Oklahoma Press, Norman.

Sharrock, S.R. and J.D. Keyser, 1974. Cultural History of the Missouri River From Fort Benton, Montana, to Garrison Reservoir, North Dakota: An Inventory of Prehistoric and Early Historic Sites. Unpublished special report of the University of Montana Statewide Archaeological Survey. Corps of Engineers, Omaha, NB.

Shumate, M., 1973. Fort McKenzie (1832-1843): Historic Salvage Archaeology. *Archaeology in Montana*. 14(2):20-43.

Shumate, M., 1973. Fort McKenzie (1832-1843): Historic Site Salvage Archaeology. *Archaeology in Montana* 14(2). Bozeman.

Shumate, M., 1984. Fort McKenzie Update 1984. Report on file, DOI, BLM, Montana Curation Facility, Billings, MT.

Spence, C.G., 1975. *Territorial Politics and Government in Montana 1864-89*. University of Illinois Press, Urbana.

Stallcop and English, 1969. A Survey of Known Archaeological Sites in North Central Montana. *Archaeology in Montana* 10(3):37.

Stanton, T.W. and J.B. Hatcher, 1905. Geology and Paleontology of the Judith River Beds. *United States Geological Survey, Bulletin 257*. Government Printing Office, Washington D.C.

Stearn, E.A. and A.E. Stern, 1945. *The Effect of Small Pox on the Destiny of the American Indian*. Humphries, Boston.

Stevens, H., 1901. *Life of Isaac Ingalls Stevens*, 2 vol. Houghton Mifflin & Co., New York.

Stevens, I., 1855. Narrative of 1855. In *Reports of Explorations and Surveys for a Railroad From the Mississippi River to the Pacific Ocean, 1853-1855*. U.S. House Executive Document 56, 36th Congress, 1st session, vol. 12, books 1 and 2.

Stocking, L., 1882. Diary, 1871-1881. Small collections 142. Montana Historical Society, Helena.

Stout, T., ed., 1921. *Montana, Its Story and Biography*. The American Historical Society, Chicago.

Stuart, G., 1925. *Forty Years on the Frontier*, edited by P.C. Phillips. Arthur H. Clark Co., Cleveland.

Sunder, J.E., 1965. *The Fur Trade on the Upper Missouri, 1840-1865*. University of Oklahoma Press, Norman.

Thwaites, R.G., ed., 1906. *Early Western Travels: 1748-1846*. The Arthur H. Clark Company, Cleveland, Ohio. Vol. XXIII.

Thwaites, R.G., 1904. *Original Journals of the Lewis and Clark Expedition, 1804-1806*, 8 vol. Dodd, Mead, and Co, New York. Vol. 2.

Time-Life Books (text by Paul O'Neil), 1975, *The Rivermen*. Time-Life Books, New York.

U.S. Department of Agriculture, Forest Service, DOI Bureau of Land Management, DOI National Park Service, 1990. *Nez Perce National Historic Trail Comprehensive Plan*. U.S. DOA, Forest Service, Northern Region, Missoula, MT.

United States Department of the Interior, Bureau of Land Management.

1978. Missouri River Management Plan. Lewistown, Montana.

1979. Missouri Breaks Grazing Environmental Impact Statement. Lewistown, Montana.

1988. West HiLine Resource Management Plan Environmental Impact Statement. Lewistown, Montana.

1991. Montana Statewide Wilderness Study Report. Billings, Montana.

1992. Upper Missouri National Wild and Scenic River Cultural Resource Management Plan. Lewistown, Montana.

1992. Judith Valley Phillips Resource Management Plan, Environmental Impact Statement. Lewistown, Montana.

1993. Upper Missouri National Wild and Scenic River Management Plan Update. Lewistown, Montana.

1996. James Kipp Recreation Area Management and Project Plan.

1997. Wookhawk Watershed Plan. Lewistown, Montana.

2000. Draft Biological Assessment for the Montana/Dakotas Off-Highway Vehicle Environmental Impact Statement. Billings, Montana.
- United States Department of the Interior, National Park Service and United States Department of Agriculture, Forest Service.
1982. Nez Perce (Nee-Me-Poo) National Historic Trail Study Report.
1990. Nez Perce National Historic Trail Comprehensive Plan.
- United States Fish and Wildlife Service Endangered Species Web Information Page.
- U.S. National Park Service, 1982. *Lewis and Clark National Historic Trail Comprehensive Plan for Management and Use*. DOI, NPS, Omaha, NE.
- Upper Missouri Outfit, 1844. Property of the Upper Missouri Outfit, American Fur Company, Fort McKenzie, March 19, 1844. Manuscripts Department, Missouri Historical Society, St. Louis, Missouri. Copy held by Historical Research Associates, Missoula, Montana.
- Utley, R.M., 1973. *Frontier Regulars: The United States Army and the Indian, 1866-1890*. Macmillan, New York.
- Wheeler, Colonel W.F., 1940. Personal History of Mr. George Weippert, Chouteau County, Montana,” and “Charles Mercier (Rondin), 1803-1891.” *Contributions to the Historical Society of Montana*, vol. 10. Helena.
- Wilson, 1983. Faunal Remains from the Thompson Bottom Site (24CH452), Montana. Report to the DOI, BLM, Lewistown District, Lewistown, MT. (On file, Montana BLM Curation Facility, Billings).
- Woolworth, A.R., 1975. Fur Trade Posts of the Trans Mississippi West: An Examination of Their Design and Construction. Paper read at the Society for Historical Archeology Meeting in Ottawa, Canada. In author's possession.



THE SECRETARY OF THE INTERIOR
WASHINGTON



434466
434466

Memorandum to the President

Date: December 21, 2000

From: Secretary Babbitt

Discussion of the Carrizo Plain National Monument Proposal

Attached is a draft proclamation, with an accompanying map,¹ to establish the Carrizo Plain National Monument in central California. This memorandum describes: (a) the basis for my recommendation that you establish the Carrizo Plain National Monument; (b) the draft proclamation; and (c) the resources, ownership patterns, and management issues present in the area. After careful review of the record, I am convinced that the objects satisfy the criteria for establishment of a national monument pursuant to the Antiquities Act, and that the boundaries of the land reserved represent the smallest area compatible with the proper care and management of those objects.

THE ANTIQUITIES ACT

Section 2 of the Antiquities Act, 16 U.S.C. 431, authorizes the President to establish as national monuments "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States..."

A. Objects of Historic or Scientific Interest

The proposed Carrizo Plain National Monument is located in central California, just off the southwest edge of the San Joaquin Valley. Elevations within the proposed monument range from 2,000 to 2,500 feet above sea level. The map appended to the draft proclamation sets out the boundaries of the land reserved for the monument. The outer boundaries of the area encompass

¹ The boundaries of the proposed monument are drawn on the map entitled "Carrizo Plain National Monument," which would be attached to, and made a part of, your proclamation. It is not practicable, as of this date, to describe the boundaries of the land reserved as a part of the monument either by metes and bounds or by reference to designated subdivisions on official surveys shown on publicly recorded plats or maps. The Bureau of Land Management (BLM) will produce a description conforming to the BLM Specifications for Descriptions of Tracts of Land for Use in Land Orders and Proclamations as soon as practicable should you decide to proceed.

approximately 246,533 acres, of which the Bureau of Land Management (BLM) manages approximately 204,107 acres. The non-federal land is owned by the California Department of Fish and Game, The Nature Conservancy, and private land owners. The draft proclamation attached to this memo vividly describes objects in the area that warrant protection as a monument, and Attachment A is a bibliography of the principal sources of information relied upon in making this recommendation.

Full of natural splendor and rich in human history, the majestic grasslands and stark ridges in the proposed Carrizo Plain National Monument contain exceptional objects of scientific and historic interest. Since the mid-1800s, large portions of the grasslands that once spanned the entire four hundred mile expanse of California's nearby San Joaquin Valley and other valleys in the vicinity have been eliminated by extensive land conversion to agricultural, industrial, and urban land uses. The proposed Carrizo Plain National Monument, which is dramatically bisected by the San Andreas Fault zone, is the largest undeveloped remnant of this ecosystem, providing crucial habitat for the long-term conservation of the many endemic plant and animal species that still inhabit the area.

The proposed monument offers a refuge for endangered, threatened, and rare animal species such as the San Joaquin kit fox, the California condor, the blunt-nosed leopard lizard, the giant kangaroo rat, the San Joaquin antelope squirrel, the longhorn fairy shrimp and the vernal pool fairy shrimp. It supports important populations of pronghorn antelope and tule elk. The area is also home to many rare and sensitive plant species, including the California jewelflower, the Hoover's woolly-star, the San Joaquin woolly-threads, the pale-yellow layia, the forked fiddleneck, the Carrizo peppergrass, the Lost Hills saltbush, the Temblor buckwheat, the recurved larkspur, and the Munz's tidy-tips. Despite past human use, the size, isolation, and relatively undeveloped nature of the area make it ideal for long-term conservation of the dwindling flora and fauna characteristic of the San Joaquin Valley region.

The proposed Carrizo Plain National Monument also encompasses Soda Lake, the largest remaining natural alkali wetland in southern California and the only closed basin within the coastal mountains. As its name suggests, Soda Lake concentrates salts as water is evaporated away, leaving white deposits of sulfates and carbonates. Despite this harsh environment, small plant and animal species are well adapted to the setting, which is also important to migratory birds. During the winter months the lake fills with water and teems with thousands of beautiful lesser sandhill cranes, long-billed curlews, and mountain plovers.

The proposed Carrizo Plain National Monument owes its existence to the geologic processes that occur along the San Andreas Fault, where two of the Earth's five great tectonic plates slide past one another, parallel to the axis of the Plain. Shifting along the fault created the Plain by rumpling the rocks to the northeast into the Temblor Range and isolating the Plain from the rest of the San Joaquin Valley. The area is world-famous for its spectacular exposures of fault-generated landforms. Stream valleys emerge from the adjacent mountains, only to take dramatic right-angle turns where they intersect the fault. Ponds and sags form where the ground is extended and subsides between branches of the fault. Benches form where the fault offsets

valley walls. Many dramatic landscape features are products of the interplay between very rapid fault movement and slower erosion. The dry climate of the area produces low erosion rates, thereby preserving the spectacular effects of fault slip, folding and warping. On the Plain, these fault-related events happen intermittently, but with great force. In 1857, the strongest earthquake in California's recorded history ripped through the San Andreas fault, wrenching the western side of the proposed Carrizo Plain National Monument thirty-one feet northward.

The area is also distinguished for its significant fossil assemblages. The Caliente Formation, exposed on the southeast side of the Caliente Range, is host to abundant and diverse terrestrial fossil mammal remains of the Miocene Epoch (from 13 million to 25 million years ago). Fossils of five North American provincial mammalian ages (Arikareean, Hemingfordian, Barstovian, Clarendonian, Hemphillian) are represented in sedimentary rocks in that formation. These terrestrial fossil remains are interlaced with marine sedimentary rocks bearing fossils of mollusks, pectens, turritellas, and oysters.

In addition to its geologic and biological wealth, the area is rich in human history. Archaeologists theorize that humans have occupied the proposed Carrizo Plain National Monument area since the Paleo-Indian Period (circa 11,000 to 9,000 B.C.). Bedrock mortar milling features, village middens, and elaborate pictographs are the primary manifestations of prehistoric occupation. Some of these, such as the Painted Rock and Sulphur Springs rock art sites, are recognized as world class. European expeditions through the area date back to the late 1700s, with settlement beginning in the 1850s. Livestock ranching, farming, and mining activities in the last century and a half are evidenced by numerous artifacts and historic ranch properties within the area.

Efforts to protect the area within the proposed monument began in 1984, when The Nature Conservancy and the BLM agreed to explore the possibility of acquiring the private lands in the Carrizo Plain region for preservation and restoration for rare and endangered San Joaquin Valley species. Over the next several years, The Nature Conservancy and the BLM managed to acquire much of the area.

The area has been evaluated for its wilderness characteristics under the Federal Land Policy and Management Act of 1976. A study was completed in 1995 that determined 24,680 acres were suitable for wilderness designation. The documentation assembled in the wilderness inventory and study processes has identified many of the objects of scientific and historic interest within the proposed monument.

B. Land Area Reserved for the Proper Care and Management of the Objects to be Preserved

The Antiquities Act authorizes the President, as part of his declaration of a national monument, to reserve land, "the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected." 16 U.S.C. § 431. The area

proposed for reservation has been carefully delineated, based on review of available information, to meet the goals of effectively caring for and managing the objects in perpetuity.

The area includes the biological, geological, and historical objects identified in the draft proclamation and Attachment A accompanying this memorandum. The area of the proposed monument is based on the conservation needs of the objects to be protected. Some of these objects, such as the biological resources, are present throughout the entire monument area. Others, such as the historic and archaeological objects, are confined to a smaller area. Many objects depend for their scientific value on their location at various sites or elevations.

Preservation of such objects requires, among other things, protection of enough land to maintain the conditions that have made their continued existence possible. The scientific value of many of the objects within the proposed monument requires preservation of areas large enough to maintain the objects and their interactions. For example, because the area is a remnant of the dwindling natural ecosystem of the San Joaquin Valley region, some sensitive species depend upon its entirety for survival. Many species must range within and through the area to maintain viable populations and their role in the ecosystem. Thus, protection of the aggregate area is necessary for proper care of the objects. Management of a patchwork of reserved lands would be impractical, as it would make it more difficult to care for the objects, reduce options for natural resource management and lead to inconsistent resource management standards for overlapping resources. In short, our analysis indicates that reservation of a smaller area would undermine proper care and management of the proposed monument.

LEGAL EFFECTS OF THE PROCLAMATION

There are several significant aspects of the proclamation. First, it would reserve only the federal lands in the area, because the Antiquities Act applies only to objects of historic or scientific interest "that are situated upon the lands owned or controlled by the Government of the United States." 16 U.S.C. § 431.

Second, the draft proclamation would be subject to valid existing rights. Thus, to the extent a person or entity has valid existing rights in the federal lands or resources within the area, the draft proclamation would respect their rights. The exercise of such rights could, however, be regulated in order to protect the purposes of the proposed monument.

Third, the draft proclamation appropriates and withdraws the federal lands and interests in lands within the boundaries of the proposed monument from entry, location, sale, leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the proposed monument. The draft proclamation would therefore prevent the Secretary of the Interior from exercising discretion under the mineral leasing acts and related laws to lease or sell federal minerals within the boundaries of the proposed monument, and also prevent the location

of new mining claims under the 1872 Mining Law. The acquired federal lands in the proposed monument are not subject to mining claim location (see Rawson v. United States, 225 F.2d 855 (9th Cir. 1955)); to provide clear public notice, the draft proclamation withdraws all the federal lands in the proposed monument, including the acquired lands, from the Mining Law.

Fourth, the draft proclamation would reserve, subject to valid existing rights and as of the date of the proclamation, sufficient water to fulfill the purposes for which the monument is established.

ADMINISTRATION OF THE MONUMENT

A. Management by the Bureau of Land Management

The federal lands in the area described in the attached draft proclamation are currently under the jurisdiction of the Bureau of Land Management (BLM) in the Department of the Interior. BLM manages the land pursuant to its basic organic authorities, the primary one being the Federal Land Policy and Management Act of 1976 (FLPMA).

I believe the area is best left under BLM management, and the attached draft proclamation would have the Secretary of the Interior manage the proposed monument through this agency. The result would be that management of the federal land would continue under this agency's existing authorities, but subject to the overriding purpose of protecting the objects described in the draft proclamation. The establishment of the proposed monument thus constitutes an overlay on the management regime otherwise applicable to lands managed by the BLM. It limits the management discretion that the BLM would otherwise have, by mandating protection of the historic and scientific objects within the national monument.

Currently, the BLM manages the Carrizo Plain area under a cooperative management agreement with The Nature Conservancy and the California Department of Fish and Game. After review and revision of the agreement, as appropriate, to ensure its consistency with the Proclamation, this arrangement could continue following establishment of the proposed monument.

The inclusion of Wilderness Study Area lands within the Carrizo Plain National Monument would have no effect on the Wilderness Study Area status or on any Congressional action to designate lands within the proposed monument as wilderness. Congress has, in fact, many times in the past designated wilderness within existing national monuments. The Wilderness Act of 1964 serves some values (e.g., outstanding opportunities for solitude and primitive and unconfined recreation) that are not addressed in the Antiquities Act of 1906 which, as noted earlier, serves to protect "objects of historic or scientific interest." On the other hand, section 2(c) of the Wilderness Act expressly acknowledges that wilderness areas "may...contain ecological, geological, or other features of scientific, education...or historic value," and section 4(b) directs that wilderness areas "shall be devoted to the public purposes" of, among others, "scientific, educational, conservation, and historical use."

B. Impact of Monument Designation on Existing or Planned Activities in the Area

1. Currently permitted livestock grazing (including water impoundments and similar range improvements), hunting, fishing, and similar activities

An experimental grazing program is being conducted in the area for the purposes of scientific research and study under 43 CFR 4130.5(b)(2). Grazing under this authority could continue as long as such use is consistent with the protection of the objects outlined in the draft proclamation, and as long as information derived from monitoring supports its use for the benefit of native species and natural communities.

Hunting and other similar uses are generally not affected except where (1) the BLM, through processes required by existing law, identifies places where such uses ought to be restricted or prohibited as necessary to protect the federal lands and resources, including the objects protected by the monument designation, or (2) the BLM finds a clear threat from such a use to the federal lands and resources, including the objects protected by the monument designation, and the circumstances call for swift protective action. Such uses will, of course, remain subject to applicable laws and regulations, and will therefore remain subject to regulation and limitation under such provisions for reasons other than establishment of the proposed monument.

2. Use of existing rights-of-way (such as those established Title V of FLPMA)

Use of existing rights-of-way would generally be subject to the same standards as described in the preceding section addressing currently permitted uses. In some cases existing rights-of-way may include valid existing rights. The exercise of such rights may be regulated in order to protect the purposes of the proposed monument, but any regulation must respect such rights.

3. Off-road vehicle use

For purposes of protecting the objects it identifies, the draft proclamation would prohibit motorized and mechanized travel off road, except for authorized administrative or emergency purposes. The current management plan generally prohibits travel off road in the proposed monument, so there should be no change in actual practice.

4. Activities on state or private land

The area within the boundaries of the draft proclamation contains approximately 6,400 acres land owned by the California Department of Fish and Game, approximately 6,400 acres owned by The Nature Conservancy, and approximately 42,000 acres that are in other private ownerships. The proposed monument designation would not apply to those lands, but the draft proclamation provides that if any of these lands within the outer boundaries of the proposed monument are acquired into federal ownership in the future, they will become part of the proposed monument. In the absence of acquisition, the laws applicable to the use of private or state lands prior to the establishment of the monument will continue to apply.

5. Mineral activity

The draft proclamation withdraws the portions of the proposed monument where the Federal government owns the mineral estate from the 1872 Mining Law (30 U.S.C. § 21 et seq), and from all forms of entry, appropriation or disposal under the public land laws. Existing mining claims that contain a valid discovery of a valuable mineral deposit as of the date of the designation would contain valid existing rights. The exercise of such rights may be regulated in order to protect the purposes of the proposed monument, but any regulation must respect such rights. Existing mining claims that lack a valid discovery of a valuable mineral deposit have no valid existing rights; activities on such claims may be regulated or prohibited to protect the purposes of the proposed monument.

Approximately 100,000 acres of land within the proposed monument is acquired land for which the federal government owns the surface estate only. The Nature Conservancy is a partial owner of the mineral estate for the largest block of acquired lands (the former Oppenheimer ranches). Where the federal government owns only the surface estate, the property regulations in the mineral estate are governed largely by state, not federal, law. Although gypsum and phosphate are common in the proposed monument, potential for development of these minerals is considered very low due to high mining costs.

Only one area in the proposed monument area now produces commercial quantities of oil and gas. This is a unit containing six Federal oil and gas leases covering approximately 6,000 acres on the south side of the Caliente range. Any valid existing rights in such leases, within this unit or elsewhere in the monument, will be respected if the area is proclaimed a national monument. Despite the drilling of at least 267 exploratory wells since 1901, no commercially successful wells have been developed, outside of this one unit. This lack of exploration success in the proposed monument area is attributed to the lack of a mature organic source for hydrocarbons. Because exploratory activity has resulted in only minor commercial success and has dwindled over time, the potential for further oil and gas development is regarded as low. New leases or sales of federally owned minerals would be prohibited as the draft proclamation withdraws the area from all applicable federal mineral leasing, minerals sales and related laws.

CONCLUSION

Establishing the Carrizo Plain National Monument would be an exemplary exercise of Presidential authority under the Antiquities Act, well in keeping with past practice through which many notable objects of historic and scientific interest have been preserved, to the Nation's great and lasting benefit. I strongly recommend you sign the proclamation.

A handwritten signature in dark ink, appearing to read "Bruce B. Babbitt", is written in a cursive, flowing style.

The Secretary of the Interior

DRAFT

Presidential Proclamation #####

Establishment of the Carrizo Plain National Monument

By the President of The United States of America

A PROCLAMATION

Full of natural splendor and rich in human history, the majestic grasslands and stark ridges in the Carrizo Plain National Monument contain exceptional objects of scientific and historic interest. Since the mid-1800s, large portions of the grasslands that once spanned the entire four hundred mile expanse of California's nearby San Joaquin Valley and other valleys in the vicinity have been eliminated by extensive land conversion to agricultural, industrial, and urban land uses. The Carrizo Plain National Monument, which is dramatically bisected by the San Andreas Fault zone, is the largest undeveloped remnant of this ecosystem, providing crucial habitat for the long-term conservation of the many endemic plant and animal species that still inhabit the area.

The monument offers a refuge for endangered, threatened, and rare animal species such as the San Joaquin kit fox, the California condor, the blunt-nosed leopard lizard, the giant kangaroo rat, the San Joaquin antelope squirrel, the longhorn fairy shrimp and the vernal pool fairy shrimp. It supports important populations of pronghorn antelope and tule elk. The area is also home to many rare and sensitive plant species, including the California jewelflower, the Hoover's woolly-star, the San Joaquin woolly-threads, the pale-yellow layia, the forked fiddleneck, the Carrizo peppergrass, the Lost Hills saltbush, the Temblor buckwheat, the recurved larkspur, and the Munz's tidy-tips. Despite past human use, the size, isolation, and relatively undeveloped nature of the area make it ideal for long-term conservation of the dwindling flora and fauna characteristic of the San Joaquin Valley region.

The Carrizo Plain National Monument also encompasses Soda Lake, the largest remaining natural alkali wetland in southern California and the only closed basin within the coastal mountains. As its name suggests, Soda Lake concentrates salts as water is evaporated away, leaving white deposits of sulfates and carbonates. Despite this harsh environment, small plant and animal species are well adapted to the setting, which is also important to migratory birds. During the winter months the lake fills with water and teems with thousands of beautiful lesser sandhill cranes, long-billed curlews, and mountain plovers.

The Carrizo Plain National Monument owes its existence to the geologic processes that occur along the San Andreas Fault, where two of the Earth's five great tectonic plates slide past one

another, parallel to the axis of the Plain. Shifting along the fault created the Plain by rumpling the rocks to the northeast into the Temblor Range and isolating the Plain from the rest of the San Joaquin Valley. The area is world-famous for its spectacular exposures of fault-generated landforms. Stream valleys emerge from the adjacent mountains, only to take dramatic right-angle turns where they intersect the fault. Ponds and sags form where the ground is extended and subsides between branches of the fault. Benches form where the fault offsets valley walls. Many dramatic landscape features are products of the interplay between very rapid fault movement and slower erosion. The dry climate of the area produces low erosion rates, thereby preserving the spectacular effects of fault slip, folding and warping. On the Plain, these fault-related events happen intermittently, but with great force. In 1857, the strongest earthquake in California's recorded history ripped through the San Andreas fault, wrenching the western side of the Carrizo Plain National Monument thirty-one feet northward.

The area is also distinguished for its significant fossil assemblages. The Caliente Formation, exposed on the southeast side of the Caliente Range, is host to abundant and diverse terrestrial fossil mammal remains of the Miocene Epoch (from 13 million to 25 million years ago). Fossils of five North American provincial mammalian ages (Arikareean, Hemingfordian, Barstovian, Clarendonian, Hemphillian) are represented in sedimentary rocks in that formation. These terrestrial fossil remains are interlaced with marine sedimentary rocks bearing fossils of mollusks, pectens, turitellas, and oysters.

In addition to its geologic and biological wealth, the area is rich in human history. Archaeologists theorize that humans have occupied the Carrizo Plain National Monument area since the Paleo-Indian Period (circa 11,000 to 9,000 B.C.). Bedrock mortar milling features, village middens, and elaborate pictographs are the primary manifestations of prehistoric occupation. Some of these, such as the Painted Rock and Sulphur Springs rock art sites, are recognized as world class. European expeditions through the area date back to the late 1700s, with settlement beginning in the 1850s. Livestock ranching, farming, and mining activities in the last century and a half are evidenced by numerous artifacts and historic ranch properties within the area.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431) authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

WHEREAS it appears that it would be in the public interest to reserve such lands as a national monument to be known as the Carrizo Plain National Monument:

NOW, THEREFORE, I, William J. Clinton, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. § 225, 16 U.S.C. § 431),

do proclaim that there are hereby set apart and reserved as the Carrizo Plain National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Carrizo Plain National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 204,107 acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument.

For the purpose of protecting the objects identified above, the Secretary shall prohibit all motorized and mechanized vehicle use off road, except for emergency or authorized administrative purposes.

Lands and interests in lands within the proposed monument not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States.

The Secretary of the Interior shall manage the monument through the Bureau of Land Management, pursuant to applicable legal authorities, to implement the purposes of this proclamation.

The Secretary of the Interior shall prepare a management plan that addresses the actions, including road closures or travel restrictions, necessary to protect the objects identified in this proclamation.

The establishment of this monument is subject to valid existing rights.

Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction of the State of California with respect to fish and wildlife management.

There is hereby reserved, as of the date of this proclamation and subject to valid existing rights, a quantity of water sufficient to fulfill the purposes for which this monument is established. Nothing in this reservation shall be construed as a relinquishment or reduction of any water use or rights reserved or appropriated by the United States on or before the date of this proclamation.

Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing permits or leases on all lands under its jurisdiction shall continue to apply with regard to the lands in the monument.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this xxxxx day of xxxxx, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fifth.

William J. Clinton

Proposed Carrizo Plain National Monument

Scale 1:250,000

- Carrizo Plain Boundary
- San Andreas Fault Zone
- Soda Lake
- Land Status**
 - BLM
 - US FS
 - US F&W
 - DOE
 - CA Fish&Game
 - Private

December 12, 2000

Proposed Carrizo Plain National Monument



Bibliography
Proposed Carrizo Plain National Monument

Biological References

Allred, K., D.F. Williams, and D.J. Germano. In press. Habitat relationships of giant kangaroo rats on the Carrizo Plain Natural Area. California Dept. Fish and Game Nongame Bird and Mammal Conservation Program, Conservation Sec. Report.

Anderson, R.L., L.K. Spiegel, and K.M. Kakiba-Russell. 1991. Southern San Joaquin Valley ecosystems protection program: natural lands inventory and maps. California Energy Commission, Sacramento, 41 pp. + maps.

Austin, Greg, U.S. Fish and Wildlife Service, California Condor Recovery Program, Ventura, CA

Barclay, L.A., B. Monson, and J.M. Barclay. 1975. Investigation of the occurrence and ecology of the blunt-nosed leopard lizard (*Crotaphytus wisliizenii silus*) in Eastern San Luis Obispo County, California. Bureau of Land Management, Bakersfield, CA. 24 pp.

Bartolome, J. M., M. Stroud, and H. Heady. 1980. Influence of Natural Mulch on Forage Production on Differing California Annual Range Sites. *Journal of Range Management* 33(1):4-8.

Belk, D. and L. Serpa. 1992. First record of *Branchinecta campestris* (Anostraca) from California and casual observations of males of *Artemia* clasping females of *Branchinecta*. *J. Crustacean Biology*, 12(3):511-513.

Bentley, J. R. and M. W. Talbot. 1951. Use of annual plants in California foothills. U. S. Department of Agriculture Circular 870. 52 pp.

Braun, S.E. 1983. Home range and activity patterns of the giant kangaroo rat, *Dipodomys ingens*. M.S. Thesis, University Minnesota, Minneapolis, 61 pp.

Braun, S.E. 1985. Home range and activity patterns of the giant kangaroo rat, *Dipodomys ingens*. *J. Mammal.* 66:1-12.

Butterworth, G. and A. Chadwick. 1995. Checklist of Plants: Carrizo Plain Natural Area, San Luis Obispo County, California. Unpubl. checklist produced by The Nature Conservancy, U.S. Bureau of Land Management, and California Dept. Fish and Game.

California Department of Fish and Game. Special Plants List. updated quarterly

California Department of Fish and Game. 1980. At the crossroads - A report on California's endangered and threatened wildlife. California Department of Fish and Game. 147 pp.

California Department of Fish and Game. 1985. Blunt-nosed leopard lizard essential habitat update, July 1, 1984-September 30, 1985. California Department of Fish and Game, Sacramento, CA Job EF84 II-I.

California Department of Fish and Game. 1989. 1988 Annual report on the status of California's state listed threatened and endangered plants and animals. California Department of Fish and Game, Sacramento, California. 129 pp.

California Department of Fish and Game. 1994. Final environmental document: antelope hunting. State of California, The Resources Agency, Department of Fish and Game, Sacramento, CA.

California Department of Fish and Game, 1994. Final environmental document: elk hunting. State of California, The Resources Agency, Department of Fish and Game, Sacramento, CA.

California Department of Fish and Game. 1998. California natural diversity database. Sacramento, Electronic form.

Chesemore, D.L. 1981. Blunt-nosed leopard inventory final report. Bureau of Land Management, Bakersfield, CA. BLM Contract YA-553-CTO-51, 143 pp.

Clawson, W. J., N. K. McDougald, and D. A. Duncan. 1982. Guidelines for residue management on annual range. University of California, Cooperative Extension, Division of Agricultural Sciences. Leaflet 21327. 4 pp.

Cooper, J.G. 1890. A doomed bird. *Zoe* 1:248-249.

Cypher, Brian, Department of Energy, Bakersfield, CA.

Cypher, E.A. 1993. Demography of four listed plant species in relation to geographic location, cattle grazing, and giant kangaroo rat activity — 1993 preliminary report. U.S. Bureau of Land Management, Bakersfield, CA, Unpubl. Rep., 21 pp.

Cypher, E.A. 1994. Demography of *Caulanthus californicus*, *Lembertia congdonii*, and *Eriastrum hooveri*, and vegetation characteristics of endangered species populations in the southern San Joaquin Valley and the Carrizo Plain Natural Area in 1993. Unpubl. Rep., California Dept. Fish and Game, Sacramento, 50 pp. + photographs.

Cypher, E.A. 1994. Progress report on 1994 grazing studies for Kern mallow and San Joaquin woolly-threads. Unpubl. Rep., U.S. Bureau of Land Management, Bakersfield, CA, 22 pp.

DeSante, D.F., E.D. Ruhlen, and D.K. Rosenberg. In review. Distribution and relative abundance of burrowing owls in California: evidence of a declining population. Condor.

Eng, L., D. Belk and C. Ericksen. 1990. California anostraca: distribution, habitat, and status. J. Crustacean Biology 10(2):247-277.

Ericksen, C. and D. Belk. 1999. Fairy shrimps of California's puddles, pools, and playas. Mad River Press, Eureka. 196 pp.

Gautier, D.L., Dolton, G.L., Takahashi, K.I., and Varnes, K.L. (eds.). 1995. National Assessment of United States Oil and Gas Resources— Results, Methodology, and Supporting Data: U.S. Geological Survey, Digital Data Series DDS-20.

Germano, D.J. In Prep. Utility of ten-day censuses to estimate abundance of blunt-nosed leopard lizards.

Germano, D.J. In Prep. Ecology of a foothill population of blunt-nosed leopard lizards.

Germano, D.J. 1993. Endangered species studies during 1992 on the Elkhorn Plain, San Luis Obispo County, California. Unpublished report to the Bureau of Land Management, Bakersfield, CA. 35 pp.

Germano, D.J., and C.R. Carter. 1995. *Gambelia sila* (Blunt-nosed leopard lizard) predation. Herpetological Review 26:100.

Germano, D.J., and D.F. Williams. 1992. *Gambelia sila* (Blunt-nosed leopard lizard) reproduction. Herpetological Review 23:117-118.

Germano, D.J., and D.F. Williams. 1992. Recovering blunt-nosed leopard lizards: past efforts, present knowledge, and future opportunities. Transactions of the Western Section of the Wildlife Society 28:38-47.

Germano, D.J., and D.F. Williams. 1993. Field evaluation of using passive integrated transponder (PIT) tags to permanently mark lizards. Herpetological Review 24:54-56.

Germano, D.J., and D.F. Williams. 1994. *Gambelia sila* (Blunt-nosed leopard lizard) cannibalism. Herpetological Review 25:26-27.

Germano, D.J., and D.F. Williams. 1994. Population ecology of blunt-nosed leopard lizards in 1994 on the Elkhorn Plain, San Luis Obispo County, California. Unpublished report to the Bureau of Land Management, Bakersfield, CA. 34 pp.

Germano, D.J., and D.F. Williams, and E. Tordoff III. 1994. Effect of drought on blunt-nosed leopard lizards (*Gambelia sila*). Northwestern Naturalist 75:11-19.

- Gervais, J.A., D.K. Rosenberg, D.M. Fry and L.A. Trulio. 1997. Evaluation of contaminant residues in burrowing owl populations from central and southern California. The Institute for Bird Populations, Point Reyes Station, CA. Publication No. 79.
- Godoy, D.F., and D.N. Oberhoff. 1998. Summer home range and investigation of nocturnal movements of pronghorn in Carrizo Plain, San Luis Obispo County, California. Biological Sciences Department, California Polytechnic State University, San Luis Obispo. 44 pp.
- Goldingay, R.L., P.A. Kelly, and D.F. Williams. 1997. The kangaroo rats of California: endemism and conservation of keystone species. *Pacific Conservation Biology* 3:47-60.
- Harris, J. H., and D. M. Stearns. 1990. Population density and census methods, habitat relationships and home range of the San Joaquin antelope squirrel, 1988-1989. Report for the California Department of Fish and Game, Sacramento, California. 56 pp.
- Harris, J.H. 1993. Diet of the San Joaquin antelope squirrel, *Ammospermophilus nelsoni*. U.S. Fish and Wildlife Service, San Simeon, CA, National Tech. Info. Serv. Rep. No. PB95-123378, 14 pp.
- Hawbecker, A. C. 1947. Food and moisture requirements of the Nelson antelope ground squirrel. *Journal of Mammalogy* 28:115-125.
- Hawbecker, A. C. 1953. Environment of the Nelson antelope ground squirrel. *Journal of Mammalogy* 34:324-334.
- Hickman, J.C. 1993. The Jepson manual: higher plants of California (J.C. Hickman, ed.). Univ. California Press, Berkeley, 1400 pp.
- Hill, Richard, California Department of Transportation, Environmental Program, Sacramento, CA
- Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. California Dept. Fish and Game, Sacramento, 156 pp.
- Hoover, R.F. 1970. The vascular plants of San Luis Obispo County, California. Univ. California Press, Berkeley, 350 pp.
- Hopkins, H.H. 1954. Effects of mulch upon certain factors of grassland environment. *Journal of Range Management*. 7:255-258.
- Johnson, T. 1969. An annotated list of herpetological fauna of the Carrizo Plain. Senior project. California State Polytechnic University.

Johnston, D. 1998. Carrizo Plain Natural Area bat survey results. H.T. Harvey and Associates, Alviso, CA. unpublished report.

Jones, L. 1980. Distributional study of the blunt-nosed leopard lizard, *Gambelia silus*, in the southern San Joaquin Valley, California. BLM contract YA-512-CT9-97, 71 pp.

Kakiba-Russel, E., E. Hubert, and L.K. Spiegel. 1991. Carrizo Plain Natural area biological resources inventory: sensitive species accounts. California Energy Commission and The Nature Conservancy, Sacramento, 247 pp.

Kato, T.T. 1986. Survey of potential habitat for the endangered San Joaquin kit fox (*Vulpes macrotis mutica*), in the Carrizo Plain, San Luis Obispo County, California. Rep. No. EGG 10282-2124, E.G.&G Energy Measurements, Goleta, CA, 24 pp. + Appendix.

Kelly, P.A., K.D. Allred, H.P. Possingham, and D.F. Williams. 1995. Draft extinction risk assessment for the San Joaquin kit fox (*Vulpes macrotis mutica*). 108 pp.

Knopf, F. and J. Rupert. 1995. Habits and habitats of mountain plovers in California. The Condor 97:743-751.

Koford, C.B. 1953. The California condor. Natl. Audubon Society, Research Report No. 4.

Langtimm, C. and G. Rathbun. 1995. Report on activities under CDFG MOU and USFWS subpermit NBSPBS. Unpublished report, U.S.D.I., National Biological Service, Piedras Blancas Research Station, CA

Leachman, B.; and B. Osmundson. 1990. Status of the Mountain Plover. U.S. Fish and Wildlife Service, Golden, Colorado. 83 pp.

Lewis, R. 1992. *Eriastrum hooveri* field inventory. Unpubl. Rep., U.S. Bureau of Land Management, Bakersfield, CA, 116 pp. + maps.

Lewis, R. 1993. *Lembertia congdonii* field inventory. Unpubl. Rep., U.S. Bureau of Land Management, Bakersfield, CA, 80 pp. + maps.

Lewis, R. 1994. *Eriastrum hooveri* field inventory. Unpubl. Rep., U.S. Bureau of Land Management, Bakersfield, CA, 120 pp.

Lewis, R. 1997. 1997 field inventory for *Layia heterotricha*, *Layia munzii*, *Layia discoidea*, *Lepidium jaredii* ssp. *jaredii*, *Acanthomintha lanceolata*, Carrizo Plain Natural Area, Clear Creek Management Area. U.S. Bureau of Land Management, Bakersfield, CA, Unpubl. Rep., 18 pp. + maps.

- Maher, C.R. 1989. A preliminary report on pronghorn reintroduced to San Luis Obispo County, California. Unpublished report. University of California, Davis
- Mason, G.T., Arndt, R.E., and Buttleman, Kim. 1996. Mineral Resources Data System (MRDS): U.S. Geological Survey, Digital Data Series DDS-20.
- Mazer, S.J., and B.A. Hendrickson. 1993. Demography, ecology, and reproductive biology of California jewelflower (*Caulanthus californicus*: Brassicaceae). Unpubl. rep., California Dept. Fish and Game, Sacramento, 113 pp.
- Mazer, S.J., and B.A. Hendrickson. 1993. Demography and reproductive biology of San Joaquin woolly threads (*Lembertia congdonii*: Asteraceae). Unpubl. Rep., California Dept. Fish and Game, Sacramento, 54 pp.
- Mazer, S.J., G. LeBuhn, and D.E. Meade. 1993. Demography and reproductive biology of Kern mallow (*Eremalche kernensis*: Malvaceae). Unpubl. Rep., California Dept. Fish and Game, Sacramento, 300 pp. + Appendices.
- Mesta, Robert, U.S. Fish and Wildlife Service, Ventura Field Office, CA
- Morrell, 1975. San Joaquin kit fox distribution and abundance in 1975. California Dept. Fish and Game. Wildl. Manage. Branch, Admin. Rep. No. 75-3, 28 pp.
- Mosquin, S., K. Ralls, D.F. Williams, and R. Fleischer. In Press. Genetic variation in relation to colony size in giant kangaroo rat (*Dipodomys ingens*) populations. California Dept. Fish and Game, Sacramento, Nongame Bird and Mammal Conserv. Program., Conserv. Sec. Rep.
- National Fish and Wildlife Foundation. 1990. Neotropical Migratory Bird Conservation Program.
- O'Farrell, T. P. 1983. San Joaquin kit fox recovery plan. E.G.&G. Energy Measurements Group, Goleta, California. Prepared for U.S. Fish and Wildlife Service, Portland, Oregon. 84 pp.
- O'Farrell, T. P. and P. McCue. 1981. Inventory of San Joaquin kit fox on BLM lands in the western San Joaquin valley. Report for Bureau of Land Management under Interagency Agreement CA-910-IA0-7. 36 pp. + appendices.
- O'Farrell, T. P., T. Kato, P. McCue, and M. Sauls. 1980. Inventory of San Joaquin kit fox on BLM lands in southern and southwestern San Joaquin valley. Report for Bureau of Land Management under Interagency Agreement CA-910-IA9-4. 74 pp. + appendices.
- Ralls, K., and P.J. White. 1995. Predation on endangered San Joaquin kit foxes by larger canids. J. Mammal. 276:723-729.

Ralls, K., and P.J. White. 1991. Kit fox-coyote relationships in the Carrizo Plain Natural Area. U.S. Fish and Wildlife Service, Sacramento, CA, Ann. Rep. 6 pp.

Randall, J.A. 1997. Social organization and communication in *Dipodomys ingens*. Report for Research during 1995-1996, Permit PR-799486, on the endangered giant kangaroo rat to U.S. Fish and Wildlife Service.

Rathbun, G. 1997. Preliminary summary of squirrel trapping on burned and unburned pastures, Carrizo Plain Natural Area, San Luis Obispo county, CA. Unpublished report, U.S. Geological Survey, Biological Resources Division, Piedras Blancas Research Station, CA

Ronan, N. 1999. The influence of nest site vegetation on reproductive success and nest site fidelity of burrowing owls (*Athene cunicularia*). Research proposal for master of science degree, Oregon State University, Corvallis.

Rosenberg, D.K. 1998. Carrizo Plain burrowing owl project. The Institute for Bird Populations, Pointe Reyes Station, CA. Unpublished report.

Rosenberg, D.K. J.A. Gervais, H. Ober and D.F. DeSante. 1998. An adaptive management plan for the burrowing owl population at NAS Lemoore. The Institute for Bird Populations, Point Reyes Station, CA. Publication No. 95.

Rosenberg, D.K., L.A. Trulio, and D.F. DeSante. 1998. The burrowing owl demography and space-use research project in California: annual report 1998. The Institute for Bird Populations, Point Reyes Station, CA. Publication No. 96

Schiffman, P.M. 1994. Promotion of exotic weed establishment by the endangered giant kangaroo rats (*Dipodomys ingens*) in a California grassland. Biodiversity and Conservation 3:524-537.

Schlorff, R. 1979. Five Year Status Report - San Joaquin Antelope Squirrel. California Department of Fish and Game, Sacramento, California. 7 pp.

Scrivner, J.H., T.P. O'Farrell, and T.T. Kato. 1987. Dispersal of San Joaquin kit foxes, *Vulpes macrotis mutica*, on Naval Petroleum reserve #1, Kern County, California. Pep. No. EGG 10282-2190, E.G.&G Energy Measurements, Goleta, CA, 32 pp.

Sherwin, R. 1998. Pallid bat (*Antrozous pallidus*) in Ecology, conservation and management of western bat species. Western Bat Working Group. Idaho Dept. Fish and Game.

Singer, M.J., J. Blackard, and G.L. Huntington. 1980. Plant Cover Helps Rangeland Soil. California Agriculture. October 1980, p. 8-10.

Skinner, M.W., and B.M. Pavlik, eds. 1994. California Native Plant Society's inventory of rare and endangered vascular plants of California. Fifth edition. Spec. Publ. No. 1, California Native Plant Society, Sacramento, CA, 338 pp.

Smith, A.R., 1964, Geologic Map of Bakersfield Sheet, California Division of Mines and Geology, California Geologic Data Map Series, 1:250,000 scale.

Speigel, Linda, California Energy Commission, Sacramento, CA.

Steinhart, P. 1990. California's Wild Heritage: Threatened and Endangered Animals in the Golden State. California Department of Fish and Game, Sacramento, California. 108 pp.

Tabor, S.P., D.F. Williams, D.J. Germano, and R.E. Thomas. 1993. Fleas (Siphonaptera) infesting giant kangaroo rats (*Dipodomys ingens*) on the Elkhorn and Carrizo Plains, San Luis Obispo, California. J. Medical Entomology 30:291-294.

Taylor, D.W. 1989. Status survey of San Joaquin woolly-threads (*Lembertia congdonii*). Unpubl. rep., U.S. Fish and Wildlife Service, Sacramento, CA, 27 pp. + Appendices.

Taylor, D.W., and W.B. Davilla. 1986. Status survey of three plants endemic to the San Joaquin Valley and adjacent areas, California. Unpubl. Rep., U.S. Fish and Wildlife Service, Sacramento, CA, 131 pp.

Tollestrup, K. 1989. The Ecology, Social Structure, and Foraging Behavior of Two Closely Related Species of Leopard Lizards, *Gambelia silus* and *Gambelia wislizenii*. Ph.D. Dissertation, University of California, Berkeley. 146 pp.

Twisselmann, E. C. 1967. A Flora of Kern County, California. The University of San Francisco. 395 pp.

USDI. 1990. Monitoring of Small Mammal Burrow Collapse in the Carrizo Plain Natural Area. Unpublished Report, Bureau of Land Management, Caliente Resource Area.

USDI, Bureau of Land Management. n.d. Briefing Paper "The Experimental Grazing Program in the Carrizo Plain Natural Area."

USFWS. 1979. California condor recovery plan. U.S. Fish and Wildlife Service in cooperation with the California Condor Recovery Team.

USFWS. 1983. San Joaquin kit fox recovery plan. Region 1, Portland OR. 84 pp.

USFWS. 1984. Environmental assessment, proposed acquisition of Bitter Creek National Wildlife Refuge, Kern, San Luis Obispo, and Ventura counties, California. U.S. Fish and Wildlife Service, Portland, Oregon.

USFWS. 1984. Revised California condor recovery plan. U.S. Fish and Wildlife Service, Portland, Oregon. 110 pp. + appendices.

USFWS. 1985. Endangered and threatened wildlife and plants; determination of endangered status for the giant kangaroo rat. Fed. Register 50:32585-32587.

USFWS. 1985. Revised Blunt-nosed Leopard Lizard Recovery Plan. U.S. Fish and Wildlife Service, Sacramento, California. 85 pp.

USFWS. 1985. Endangered Species Technical Bulletin. Vol. X, No. 9. September 1985.

USFWS. 1987. Endangered Species Technical Bulletin. Vol. XII, No. 8.

USFWS. 1987. Endangered and threatened wildlife and plants; determination of endangered status for the giant kangaroo rat. Fed. Register 52:283-288.

USFWS. 1988. Draft Revised Kit Fox Recovery Plan - First Draft. Unpublished First Draft. U. S. Fish and Wildlife Service, Sacramento, California. 101 pp.

USFWS. 1988. Revised blunt-nosed leopard lizard recovery plan. U.S. Fish and Wildlife Service, Portland, OR. 85 pp.

USFWS. 1989. Formal Section 7 consultation concerning a proposed livestock grazing program for the Carrizo Plain, San Luis Obispo County, California. U.S. Fish and Wildlife Service, Sacramento, California. Biological Opinion 1-1-89-F-53, October 30, 1989. 13 pp.

USFWS. 1990. Endangered species technical bulletin. Vol. XV, No.9.

USFWS. 1990. Endangered and threatened wildlife and plants; determination of endangered or threatened status for five plants from the southern San Joaquin Valley. Fed. Register 55:29361-29370.

USFWS. 1991. Reinitiation of Formal Section 7 consultation on effects of livestock grazing in the Carrizo Plain Natural Area, San Luis Obispo County, California, Biological Opinion 1-1-89-F-53R, April 11, 1991. 11 pp.

USFWS. 1993. Endangered and threatened wildlife and plants: review of plant taxa for listing as endangered or threatened species. Fed. Register 58:51144-51190.

USFWS. 1994. Endangered and threatened wildlife and plants; animal candidate review for listing as endangered or threatened species; proposed rule. Fed. Register 59:58982-59028.

USFWS. 1994. Endangered and threatened wildlife and plants; determination of endangered status for the conservancy fairy shrimp, longhorn fairy shrimp, and the vernal pool tadpole shrimp; and threatened status for the vernal pool fairy shrimp. Fed. Register 59:48136-48154.

USFWS. 1996. California condor recovery plan, third revision. U.S. Fish and Wildlife Service, Portland, Oregon. 62 pp.

USFWS. 1998. Draft environmental assessment for the release of the California condor at the Chimney's release area on the Wind Wolves Preserve, Kern county, California. Prepared by RUIZ & REED for the U.S. Fish and Wildlife Service, Hopper Mountain National Wildlife Refuge Complex, Ventura, California.

USFWS. 1998. Recovery plan for upland species of the San Joaquin Valley, California. Region 1, Portland OR. 319 pp

Western Bat Working Group. 1998. Western bat species, regional priority matrix. Reno, Nevada meeting

Wallace, Robert E., ed. 1990. The San Andreas Fault System, U.S. Geological Survey Professional Paper 1515, 282 p.

White, P.J., and K. Ralls. 1993. Reproduction and spacing patterns of kit foxes relative to changing prey availability. J. Wildl. Manage. 57:861-867.

White, P.J., K. Ralls, and R.A. Garrott. 1994. Coyote-kit fox spatial interactions based on radio-telemetry. Canadian J. Zool. 72:1831-1836.

White, P.J., C.A. Venderbilt-White, and K. Ralls. 1996. Functional and numerical responses of kit foxes to a short-term decline in mammalian prey. J. Mammal.

Wilbur, S.R. 1978. The California condor, 1966-1976: a look at its past and future. U.S. Fish and Wildlife Service, North American Fauna 72.

Williams, D.F. 1980. Distribution and population status of the San Joaquin antelope squirrel and giant kangaroo rat. California Dept. Fish and Game, Sacramento, Nongame Wildlife. Investigations, Final Report E-W-R, IV-10.0 48 pp.

Williams, D.F. 1985. A Review of the Population Status of the Tipton Kangaroo Rat, *Dipodomys nitratooides*. Unpublished report prepared for U.S. Fish and Wildlife Service, Sacramento, California. 9 pp.

Williams, D.F. 1986. Mammalian Species of Concern in California. California Department of Fish and Game. 111 pp. + appendix.

Williams, D.F. 1992. Geographic distribution and population status of the giant kangaroo rat, *Dipodomys ingens*, (Rodentia, Heteromyidae). Pp. 301-328, in Endangered and sensitive species of the San Joaquin Valley, California (D.F. Williams, S. Byrne, and T.A. Rado, eds.). California Energy Commission, Sacramento, 388 pp.

Williams, D.F. 1993. Recovery of endangered kangaroo rats in the San Joaquin Valley, California. 1992 Trans. West. Sec. Wildl. Soc. 28:93-106.

Williams, D.F., D.J. Germano, and W. Tordoff III. 1988. Effects of livestock grazing on an endangered community: Elkhorn Plain, San Luis Obispo County, California. Pages 7-43 in D.F.

Williams, W. Tordoff III, and J.H. Harris. San Joaquin antelope squirrel (*Ammospermophilus nelsoni*) study - 1988. Unpublished report to the California Department of Fish and Game, Sacramento, CA 40 pp.

Williams, D. F., D. J. Germano, and W. Tordoff III. 1989. Endangered Species Study - 1989: Effects of Livestock Grazing on an Endangered Community Dominated by Giant Kangaroo Rats (*Dipodomys ingens*), Progress Report - 1989. Unpublished report dated August 27, 1989. Prepared for The Nature Conservancy, San Francisco, California. 23 pp.

Williams, D. F., D. J. Germano, and W. Tordoff III. 1990. Endangered species Study 1990. Effects of livestock grazing on an endangered community dominated by giant kangaroo rats (*Dipodomys ingens*). Unpublished report to the Bureau of Land Management, Bakersfield, CA 29 pp.

Williams, D. F., D. J. Germano, and W. Tordoff III. 1993. Population studies of endangered kangaroo rats and blunt-nosed leopard lizards in the Carrizo Plains Natural Area, California. Unpublished report, California Department of Fish and Game, Nongame Bird and Mammal Sec. Rept. 93-01. 114 pp.

Williams, D.F., and K.S. Kilburn. 1992. The conservation status of the endemic mammals of the San Joaquin Faunal Region, California.. Pp. 329-348, in Endangered and sensitive species of the San Joaquin Valley, California (D.F. Williams, S. Byrne, and T.A. Rado, eds.). California Energy Commission, Sacramento, 388 pp.

Williams D.F. and S. Nelson. In press. Population studies of giant kangaroo rats on the Carrizo Plain Natural Area, San Luis Obispo County, California. California Dept. Fish and Game, Sacramento, Bird and Mammal Conservation Rep.

Williams, D.F., and W. Tordoff III. 1988. Operations and maintenance schedule: Elkhorn Plain Ecological reserve, San Luis Obispo County, California. California Dept. Fish and Game, Non-game Heritage Program, Sacramento, Final Rep. 71 pp.

Williams, D.F., W. Tordoff III and J. Harris. 1988. San Joaquin antelope squirrel (*Amospermophilus nelsoni*) study - 1988, draft final report. California Dept. of Fish and Game, Endangered Wildlife Program, Contract No. 7398. 29 pp.

Cultural References

Angel, Myron, 1910. La Piedra Pintada: The Painted Rock. San Luis Obispo: Padre Publications, Reprint, 1979.

Blackburn, Thomas, 1975a. December's Child: A Book of Chumash Oral Narratives. Berkeley: University of California Press.

Blackburn, Thomas, 1977. Biopsychological Aspects of Chumash Rock Art. *Journal of California Anthropology* 4(1):88-94.

Breschini, Gary, Trudy Haversat, and R. Paul. Hampson, 1983. A Cultural Resources Overview of the Coast and Coast-Valley Study Areas. Overview prepared for the Bureau of Land Management, Contract YA-553-CTI-1099.

Cawley, John, 1963. Washburn Ranch, 2nd Site: Sulphur Springs, located in section 36, in the northwest quarter, viewed on 19th of January 1963. Personal notes, in possession of author.

Christian, Duane and Dana McGown (Editors), 1988. Carrizo Plain Natural Heritage Reserve Land Exchange and Acquisition, Cultural Resource Inventory/ Assessment Report. Prepared for the Bureau of Land Management, Caliente Resource Area, Bakersfield District.

Finnerty, Pat, 1963. A Burial Site on the Carrizo Plain. Ms on file, University of California, Santa Barbara, Department of Anthropology.

Grant, Campbell, 1963b. Santa Barbara Museum of Natural History Pictograph Survey Records, Selby #1- Selby#6, CGSL-17, 19, 19, 20, 21, 22. Ms in author's possession.

Grant, Campbell, 1965. The Rock Paintings of the Chumash: A Study of a California Indian Culture. Berkeley: University of California Press.

Grant, Campbell, 1978. Interior Chumash. In Handbook of North American Indians, Vol. 8, ed. by R.F. Heizer. Washington, D.C.: Smithsonian Institution. Pp. 530-534.

Harrington, John P., n.d., Unpublished field notes on the Chumash. On file at the National Anthropological Archives, Smithsonian Institution, Washington, D.C.

Heizer, Robert F. (Editor), 1978. California. Handbook of North American Indians, Vol. 8. Washington. D.C.: Smithsonian Institution.

Heizer, Robert F. and C.W. Clewlow, Jr, 1973. Prehistoric Rock Art of California. Ramona, California: Ballena Press.

Heizer, Robert F. and Albert B. Elsasser. 1980. The Natural World of the California Indians. California Natural History Guides: 46. University of California Press: Berkeley.

Horne, Stephen P., 1981. The Inland Chumash: Ethnography, Ethnohistory, and Archaeology. Ph.D. dissertation. University of California, Santa Barbara.

Hudson, Travis and Thomas C. Blackburn, 1979. The Material Culture of the Chumash Interaction Sphere: Volume I: Food Procurement and Transportation. Ballena Press Anthropological Papers No. 25: Santa Barbara Museum of Natural History Cooperative Publication.

Hudson, Travis and Thomas C. Blackburn, 1981. The Material Culture of the Chumash Interaction Sphere: Volume II: Food Preparation and Shelter. Ballena Press Anthropological Papers No. 27: Santa Barbara Museum of Natural History Cooperative Publication.

Hudson, Travis and Thomas C. Blackburn, 1984. The Material Culture of the Chumash Interaction Sphere: Volume III: Clothing, Ornamentation, and Grooming. Ballena Press Anthropological Papers: Santa Barbara Museum of Natural History Cooperative Publication.

Hudson, Travis and Thomas C. Blackburn, 1986. The Material Culture of the Chumash Interaction Sphere: Volume IV: Ceremonial Paraphernalia, Games and Amusements. Ballena Press Anthropological Papers No. 30: Santa Barbara Museum of Natural History Cooperative Publication.

Hudson, Travis and Thomas C. Blackburn, 1986. The Material Culture of the Chumash Interaction Sphere: Volume V: Manufacturing Processes, Metrology, and Trade. Ballena Press Anthropological Papers No. 31: Santa Barbara Museum of Natural History Cooperative Publication.

Hyder, William D., Georgia Lee, and Mark Oliver. 1986. Culture, Style, and Chronology: The Rock Art of the Carrizo Plain. Paper presented at the 1984 American Rock Art Research Association meetings, Boulder City, Nevada. Published in: American Indian Rock Art, 43-56. El Toro Press.

Johnson, John, 1985. Archaeological Surveys from Painted Rock to Selby Cow Camp for Oppenheimer Industries. On file at the Bureau of Land Management, Bakersfield Field Office.

Kroeber, Alfred L., 1925. Handbook of the Indians of California. Bureau of American Ethnology Bulletin 78. Smithsonian Institution: Washington, D.C.

Lathrap, Donald W., 1959. A Distinctive Pictograph from Carrizo Plains, San Luis Obispo County. Reports of the University of California Archaeological Survey 9.

Latta, Frank F., 1977. Handbook of Yokuts Indians. Santa Cruz: Bear State Books.

Lee, Georgia, 1980. Archaeological Site Survey Reports, SLO-79, SLO-105, and SLO-995. On file at the Archaeological Information Center, University of California, Santa Barbara, Department of Anthropology.

Lee, Georgia, 1981. The Portable Cosmos: Effigies, Ornaments, and Incised Stone from the Chumash Area. Editors: John Bean and Thomas C. Blackburn. Ballena Press Anthropological Papers No. 21.

Lee, Georgia, 1981. Vandalism Report, Site SLO-79, Painted Rock, San Luis Obispo County. Ms on file, University of California, Santa Barbara, Department of Anthropology, Accession No. 344.

Lee, Georgia, 1984. The Painted Rock Site (CA-SLO-79) of Carrizo Plain. Report prepared for the Santa Barbara Museum of Natural History.

Lee, Georgia, 1991. The Sulphur Springs Sites, Carrizo Plain: A Report prepared for the Bureau of Land Management, Bakersfield, California, and the Santa Barbara Museum of Natural History, Santa Barbara, California. On file at the Bureau of Land Management, Bakersfield Field Office.

Mason, J. Alden, 1912. The Ethnology of Salinan Indians. University of California Publications in American Archaeology and Ethnology 10(4)97-240. University of California Press; Berkeley.

Moratto, Michael J., 1984. California Archaeology. Orlando, Florida: Academic Press.

Orr, Regina M., 1994. Historic Study of the Traver Ranches in the Carrizo Plain Natural Area. California Polytechnic State University, San Luis Obispo, Department of Natural Resources Management. Ms on file at Bureau of Land Management, Bakersfield Field Office.

Pilling, Arnold, 1950. SLO-105 on April 27, 1950. Ms appended to Archaeological Site Survey Record, SLO-105. On file at the Archaeological Information Center, University of California, Santa Barbara, Department of Anthropology.

Pilling, Arnold, Donald Lathrap, and Franklin Fenenga, 1950. Archaeological Site Record SLO-105. On file at the Archaeological Information Center, University of California, Santa Barbara, Department of Anthropology.

Scott, D.A., 1990. Chumash Rock Art: A study of Pictograph Pigments and their Conservation. Report No. 2: Some pigment and rock cross-sectional studies. Getty Conservation Institute, Marina Del Rey.

Supernowicz, Dana E. (Editor), 1991. Determination of Eligibility for Washburn, Selby, and K.C.L. Ranches within the Carrizo Plain, San Luis Obispo County, California. Prepared for the United States Department of Interior, Bureau of Land Management, Sacramento, California.

Whitley, David S., 1996. A Guide to Rock Art Sites: Southern California and Southern Nevada. Mountain Press Publishing Company: Missoula, Montana.

Geological References

D. and Sieh, K., 1978, A documentary study of the felt effects of the great California earthquake of 857: Seismol. Soc. America Bull., 68, pp. 1717-1729.

Allen, C.R., 1968, The tectonic environments of seismically active and inactive areas along the San Andreas Fault system, in W.R. Dickinson and A. Grantz, eds., Proceedings of conference on geologic problems of San Andreas fault system, Stanford University Publications in the Geological Sciences, 70-82.

Arnold, R., and H. R. Johnson, 1908, Sodium Sulphate in Soda Lake, Carriso Plain, San Luis Obispo County, California, Contributions to Economic Geology 1908, United States Geological Survey Bulletin 380, pp. 369-72.

Arnold, R. and H.R. Johnson, 1910, Preliminary report on the McKittrick-Sunset oil region, Kern and San Luis Obispo counties, California, U.S. Geological Survey Bulletin 406.

Arrowsmith, J R., Potential for earthquake rupture and M 7 earthquakes along the Parkfield, Cholame, and Carrizo segments of the San Andreas Fault, Seismological Research Letters, v. 68, p. 323.

Arrowsmith, R. and D. D. Rhodes, 1992, Kinematics, structure, and degradation of pressure ridges along the San Andreas fault in the Carrizo Plain, San Luis Obispo County, California, Geological Society of America Abstracts with Programs, 24, 3.

Arrowsmith, J. Ramon, 1995, Coupled tectonic deformation and geomorphic degradation along the San Andreas fault system: Ph. D. dissertation, Stanford University, Stanford, California, 346 p.

Arrowsmith, J R., McNally, K., and Davis, J., 1997, Potential for earthquake rupture and M 7 earthquakes along the Parkfield, Cholame, and Carrizo segments of the San Andreas fault, Seismological Research Letters, v. 68, no. 6, p. 902-916.

Arrowsmith, J R., 1998, Rhodes, D. D., and Pollard, D. D., Morphologic dating of scarps formed by repeated slip events along the San Andreas Fault, Carrizo Plain, California, *Journal of Geophysical Research*, v. 103, N. B5, pp. 10,141-10,160.

Arrowsmith, J R., D. D. Pollard, and D. D. Rhodes, 1995, Morphologic dating of scarps along the San Andreas fault, Carrizo Plain, California and progressive deformation along the Big Bend, *Geological Society of America Abstracts with Programs*, 1995 Annual meeting.

Arrowsmith, R., 1992, Progressive deformation and degradation along the northern portion of the Big Bend of the San Andreas fault, *Geological Society of America Ab. with Programs*, 24, A147.

Arrowsmith, J R., D. D. Pollard, G. Hilley, and D. D. Rhodes, 1995, Morphologic dating of scarps along the San Andreas fault, Carrizo Plain, California and progressive deformation along the Big Bend, *EOS Transactions AGU*, 1995 Fall AGU Meeting.

Arrowsmith, R., 1989, Geomorphic responses in ephemeral channels to strike-slip faulting along the San Andreas fault, Carrizo Plain, San Luis Obispo County, California, 67 pp., Whittier College, Whittier, California.

Arrowsmith, J.R., and Rhodes, D.D., 1989, Geomorphic responses of ephemeral streams to strike-slip movement along the San Andreas Fault, Carrizo Plain, San Luis Obispo County, California: *Geological Society of America Abstracts with Programs*, v. 21, no. 6, p. A59.

Arrowsmith, R., The Northern Elkhorn Hills, 1991, A 2 km wide deformation zone near the Big Bend of the San Andreas fault, *Geological Society of America Abstracts with Programs*, 23, 4.

Arrowsmith, J.R., and Rhodes, D.D., 1992, Kinematics, structure, and degradation of pressure ridges along the San Andreas Fault in the Carrizo Plain, San Luis Obispo County, California: *Geological Society of America Abstracts with Programs*, v. 24, p. A3.

Arrowsmith, J.R., Pollard, D.D., and Rhodes, D.D., 1995, Morphologic dating of scarps along the San Andreas Fault, Carrizo Plain, California and progressive deformation along the Big Bend: *Geological Society of America Abstracts with Programs*, v. 27, no. 6, p. A221-A222.

Arrowsmith, J.R., Pollard, D.D., Hilley, G., and Rhodes, D.D., 1995, Morphologic dating of scarps along the San Andreas fault, Carrizo Plain, California and progressive deformation along the Big Bend: *EOS, Transactions, American Geophysical Union*, v. 76, no. 46, p. F575.

Arrowsmith, J R., 1996, Stop 5--Three quick stops along the San Andreas fault northwest of Highway 166, in Dholakia, S., Lore, J., and Brankman, C., eds., *Fault control on hydrocarbon migration in the Monterey formation, CA, Proceedings of the Stanford Rock Fracture Project*, pp. 5-1 - 5-7.

Arrowsmith, J.R., Grant, L., and Rhodes, D.D., 1997, Investigation of historic and paleoseismic behavior of the south-central San Andreas Fault between Cholame and the Carrizo Plain: Southern California Earthquake Center Annual Meeting Abstracts.

Arrowsmith, J.R., Rhodes, D.D., and Pollard, D.D., 1998, Morphologic dating of scarps formed by repeated slip events along the San Andreas Fault, Carrizo Plain, California: *Journal of Geophysical Research*, v. 103, p. 10141-10160.

Barger, R. M., et al, 1952, Russell Ranch Oil Field, California Division of Oil and Gas, Vol. 38, No. 2, p. 5-10.

Bartow, J. A., 1974, Sedimentology of the Simmler and Vaqueros Formations in the Caliente Range-Carrizo Plain Area, California, United States Geological Survey Open File Report 74-338.

Bartow, J. A., 1990, Geologic map of the northwestern Caliente Range San Luis Obispo County, California: U. S. Geological Survey Map I-2077.

Bramlette, M. N., 1946, The Monterey Formation of California and the origin of its siliceous rocks: U. S. Geological Survey Professional Paper 212.

Bakun, W. H., March, 1988, Historic Seismicity of the Parkfield Area: California Division of Mines and Geology, California Geology, Vol. 41, no. 3, pp. 61-62.

Bakun, W. H., September, 1988, Parkfield Earthquake Prediction Experiment Geophysical Instrumentation Near Parkfield and Parkfield Earthquake Prediction Alert Levels: California Division of Mines and Geology, California Geology, Vol. 41, no. 9, pp. 205-208.

Bakun, W. H., et al, 1988, Parkfield The Prediction and the Promise, *Earthquakes & Volcanoes*, Vol. 20, Number 2.

Brown, R. D., et al, 1967, The Parkfield-Cholame California, Earthquakes of June-August 1966-Surface Geologic Effects Water-Resources Aspects, and Preliminary Seismic Data, Geological Survey Professional Paper 579.

Brown, R.D., Jr. 1970. Map showing recently active breaks along the San Andreas and related faults, between the northern Gabilan Range, and Cholame Valley, California, U.S. Geological Survey. Miscellaneous Investigations Map I-575, scale 1:62,500.

Carter, J. B., 1985, Depositional Environments of the Type Temblor Formation, Chico Martinez Creek, Kern County, California, *Geology of the Temblor Formation Western San Joaquin Basin, California*, SEPM-Pacific Section.

Cawley, J. J., 1962, Aborigines of the Carrizo Plains in Guidebook to the geology of Carrizo Plain and San Andreas fault, San Joaquin Geology Society and Pacific Section American Association of Petroleum Geologists and Society Economic Paleontologists and Mineralogists, p. 36.

Clark, W. B., 1970, Gold Districts of California, California Division of Mines and Geology, Bulletin 193, p. 179.

Crider, J. G., M. L. Cooke, E. J. M. Willemse, and Arrowsmith, J. R., 1996, Basic mechanics of jointing and faulting through interactive linear-elastic crack models, in Microcomputers in structural geology, D. De Paor, editor, pp. 359-388.

Collier, Michael. 1999. A Land in Motion, California's San Andreas Fault. Golden Gate National Parks Association and University of California Press, Berkeley, 118 p.

Cooper, Jon W., 1990, A geophysical study of the hydrogeology of the Carrizo Plain area, San Luis Obispo County, California: MS dissertation, San Jose State University, San Jose California, 77 p.

Dibblee, T. W., Jr., 1962, Displacements on the San Andreas rift zone and related structures in Carrizo Plain and vicinity, in Guidebook to the geology of Carrizo Plain and San Andreas fault, San Joaquin Geology Society and Pacific Section American Association of Petroleum Geologists and Society Economic Paleontologists and Mineralogists, p. 5-12, pl. 1.

Dibblee, T. W., Jr., 1973, Regional Geologic Map of San Andreas and related Faults in Carrizo Plain, Temblor, Caliente, and La Panza Ranges and Vicinity, California, U. S. Geological Survey, Miscellaneous Geologic Investigations Map I-757.

Dibblee, T. W., Jr., 1973, Stratigraphy of the Southern Coast Ranges near the San Andreas Fault from Cholame to Maricopa, California, Geological Survey Professional Paper 764.

Dibblee, T. W., Jr., 1989, The San Andreas Fault and Major Rock Terranes of California Displaced by It and Its Tectonics, South Coast Geological Society, Inc., Guidebook Number 17, San Andreas Fault, Cajon Pass to Wallace Creek, Vol. 1, pp. 223-275.

Dolman, S. B., 1950, Operations in District 3: California Division of Oil and Gas, Summary of Operations in California Oil Fields Vol. 36 No.2.

Dougherty, Jack F., 1940, A new Miocene mammalian fauna from Caliente Mountain, California: Carnegie Institution of Washington Publication v. 518 n. 8, p. 109-143.

Durham, D. L., 1979, Preliminary map of uranium occurrences in the Temblor Range, Kern and San Luis Obispo Counties, California: U.S. Geological Survey Map MF-1047.

Durham, D. L., 1987, Uranium in the Monterey Formation of California: U.S. Geological Survey Bulletin 1581.

Eaton, J. E., 1939, Geology and Oil Possibilities of Caliente Range, Cuyama Valley, and Carrizo Plain, California, California Journal of Mines and Geology, Vol. 35, No. 3, p. 255-274.

Eigenbrode, J., Davis, C., Pratt, L.M., Arrowsmith, J.R., Rhodes, D.D., and Rossbacher, L.A., 1997, Climate change recorded by sedimentary organic matter in Soda Lake, southern California: Geological Society of America Abstracts with Programs, v. 29, no. 6, p. A155.

Eigenbrode, J.L., Pratt, L.M., Rhodes, D.D., Arrowsmith, J.R., Mora, G., 1999, Sedimentological and carbon-isotopic records of late Holocene climate in the sediments of Soda Lake, Carrizo Plain, California: Geological Society of America Abstracts with Programs, v. 31. Annali di Geofisica, v. 39, p. 1301-1307.

Ellsworth, W.L., 1990, Earthquake history, 1769-1989, in The San Andreas fault system,, (edited by R.E. Wallace), United States Geological Survey, 153-181.

Fleischer, M., 1975, 1975 Glossary of mineral Species (Mineralogical Record: Bowie, Maryland) 145 p.

Gale, H. S., 1912, Sodium Sulphate in the Carrizo Plain, San Luis Obispo County, California, Contributions to Economic Geology, United States Geological Survey Bulletin 540, pp. 428-33.

Gazin, C. L. 1930, Tertiary mammal-bearing beds in the upper Cuyama drainage basin, California: Ph. D. thesis, California Institute of Technology, Pasadena, California, 62 p.

Gower, H. D., and Beth M. Madsen, 1964, The occurrence of phosphate rock in California: U.S. Geological Survey Professional Paper, 501- d, p. D79-D85.

Gower, H. D., 1966, Phosphate in Mineral Resources of California: California Division of Mines and Geology Bulletin 191, p. 328-332.

Graff, L. B., 1962, Exploration drilling in the Carrizo Plain, in Guidebook: geology of Carrizo Plains and San Andreas fault, (edited by O. Hackell). San Joaquin Geological Society and Pacific Section, AAPG and SEPM, 21 - 23.

Grant, L. and K. E. Sieh, 1990, Stratigraphic evidence that offset from the 1857 Earthquake in the Carrizo Plain, CA, is less than suggested from geomorphology, in Eos, Trans. Amer. Geophys. U., 71,1452.

Grant, L., and K. Sieh, submitted 1992, Irregular recurrence times and increased seismic hazard from earthquakes on the Carrizo segment of the San Andreas fault, southern California: Association Engineering Geologists Annual meeting. Long Beach, California, October 1992.

Grant, L. B., K. Sieh, 1993, Paleoseismic Evidence of Clustered Earthquakes on the San Andreas Fault in the Carrizo Plain, CA: in EOS, Trans. Amer. Geophys. U., 74, p. 427

Grant, L., and K. Sieh, 1993, Stratigraphic evidence for 7 meters of dextral slip on the San Andreas fault during the great 1857 earthquake in the Carrizo Plain: Seismol. Soc. America Bull., 83, 619-635.

Grant, Lisa Baugh, 1993, Characterization of Large Earthquakes on the San Andreas Fault in the Carrizo Plain: Implications for fault mechanics and seismic hazard: Ph. D. dissertation, California Institute of Technology, Pasadena, California

Grant, L. B., K. Sieh, 1994, Paleoseismic Evidence of Clustered Earthquakes on the San Andreas Fault in the Carrizo Plain, CA.: Journal of Geophysical Research, 99, 6819- 6842.

Grant, L. B., Arrowsmith, J R., Stone, E. M., and Rhodes, D. D., 1998, Investigation of historic land surveys across the San Andreas Fault between Cholame and the Carrizo Plain - Preliminary Results, Southern California Earthquake Center Annual Meeting.

Hall, N. and Sieh, K., 1977, Late Holocene rate of slip on the San Andreas fault in the northern Carrizo Plain, San Luis Obispo County, California: in Abstracts with Programs, Cordilleran Section, Geol. Soc. America, 9, no. 4, pp. 428-429.

Harris, R.A. and R.J. Archuleta, 1987, Slip budget and potential for a M7 earthquake in Central California, Geophysical Research Letters, 15, No. 11 pp. 1215-1218.

Hackel, O., Editor, 1962, Guidebook Geology of Carrizo Plains and San Andreas Fault 1962, San Joaquin Geological Society and Pacific Section, AAPG-SEPM.

Heikkila, H. H., 1951, California Division of Mines Special Report 6.

Herring, J. R., and W. F. Stowasser, 1991, Phosphate-Our nation's most important agricultural mineral commodity and its uncertain future: Geological Society of America Abstracts with Programs Vol 23, No. 5, p. A299-A300.

Higgins, C. T, 1980, Geothermal Resources of California: California Division of Mines and Geology Geologic Data Map Series Map No. 4.

Hill, M. L., March, 1981, San Andreas Fault: History of Concepts, Geological Society of America Bulletin, Part 1, Vol. 92, pp. 112-131.

Hill, M. L. and Dibblee, T. W., Jr., April, 1953, San Andreas, Garlock, and Big Pine Faults, California, Bulletin of the Geological Society of America, Vol. 64, pp. 443-458.

Hilley, G., R Arrowsmith, D D Pollard, 1996, A geographic information system applied to areas of active tectonics, Geological Society of America Abstracts with Programs, 1996 Annual meeting, v. 28, no. 7, p. 265.

Irelan, W., Jr., 1888, Eighth Annual Report of the State Mineralogist, California State Mining Bureau, p. 532.

Isaacs, C. M., 1981, Porosity reduction during diagenesis of the Monterey Formation, Santa Barbara Area California in The Monterey Formation and related siliceous rocks of California: Society of Economic Paleontologists and Mineralogists Symposium.

Jacoby, G., P. Sheppard and K. Sieh, 1988, Irregular recurrence of large earthquakes along the San Andreas fault in southern California -- Evidence from trees near Wrightwood: Science, 241, 196-199.

Kelly, Thomas, S., and E. Bruce Lander, 1988, Biostratigraphy and correlation of Hemingfordian and Barstovian land mammal assemblages, Caliente Formation, Cuyama Valley area, California in Bazeley, W. J. M., ed., 1998, Tertiary Tectonics and sedimentation in the Cuyama Basin, San Luis Obispo, Santa Barbara and Ventura Counties, California: Pacific Section S.E.P.M., vol. 59, p. 1-9

Keroher, G. C., et al, 1966, Lexicon of Geologic Names of the United States For 1936-1960, Geological Survey Bulletin 1200.

Keroher, G. C., et al, 1970, Lexicon of Geologic Names of the United States For 1961-1967, Geological Survey Bulletin 1350.

Kostick, D. S., "Sodium Sulfate", Industrial Minerals 1992, Mining Engineer, Vol. 45, No. 6, June, 1993, p. 586.

Lagoe, Martin B., 1984, Paleogeography of Monterey Formation, Cuyama Basin, California: The American Association of Petroleum Geologists Bulletin v. 68, no. 5 p. 610-627.

Lagoe, M. B., 1988, An outline of Foraminiferal biofacies in the Soda Lake Shale Member, Vaqueros Formation, Cuyama Basin, California, pp. 21-28 in Bazeley, W. J.M., ed., 1998, Tertiary Tectonics and sedimentation in the Cuyama Basin, San Luis Obispo, Santa Barbara and Ventura Counties, California: Pacific Section S.E.P.M., vol. 59, p. 1-9

Lawrence, E. D., 1960, Morales Oil Field, California Division of Oil and Gas, Vol. 48, No. 2, p. 97-107.

Lawson, A.C. and others, 1908, Report of the earthquake investigation commission upon the California earthquake of April 18, 1906, Carnegie Institution of Washington, D. C.

Lienkaemper, J.J. and W.H. Prescott, Historic surface slip along the San Andreas Fault near Parkfield, California, *Journal of Geophysical Research, B, Solid Earth and Planets*, 94, 17,647-17,670, 1989.

Lienkaemper, J.J. and T.A. Sturm, Reconstruction of a channel offset in 1857(?) by the San Andreas Fault near Cholame, California, *Bulletin of the Seismological Society of America*, 79, 901-909, 1989.

Lima, Joseph M., 1975, Precipitation and temperature analysis of the Carrizo Plain, San Luis Obispo County, California: Senior Project, California Polytechnic State University, San Luis Obispo, California, 153 p.

Majmundar, H. H., 1985, Sodium Sulfate: California Division of Mines and Geology, Mineral Commodity Report, Special Publication 81., 11 p.

Meisling, K.E. and Sieh, K., 1979, The effect of the 1857 Fort Tejon earthquake on trees near Wrightwood and Frazier Park, California: in *Abstracts with Programs, Cordilleran Section, Geol. Soc. America*, 11, no. 7, p. 478.

Meisling, K.E. and Sieh, K., 1980, Disturbance of trees by the 1857 Fort Tejon earthquake, California: *J. Geophys. Res.*, 85, pp. 3225-3238.

Mora, German, Pratt, Lisa M., Eigenbrode, J., Rhodes, D.D., 1998, Biogeochemical dynamics and evolution of gypsiferous soils in the Carrizo Plain, California: *Geological Society of America Abstracts with Programs*, v. 30, no. 7, p. A359.

Murata, K. J., Larson, R. R., 1975, Diagenesis of Miocene Siliceous Shales, Temblor Range, California: *U. S. Geological Survey Journal of Research*, Vol. 3, No. 5, p. 553-566.

Murata, K. J., Dibblee, T. W., Jr., and Drinkwater, J. L., 1979, Thermal effects of large bodies of intrusive serpentinite on overlying Monterey Shale, southern Diablo Range, Cholame area, California: *U. S. Geological Survey Professional Paper* 1082, 8 p.

Oldershaw, Michael William, 1990, Depositional environments and paleogeography of the Miocene Painted Rock Sandstone Member of the Vaqueros Formation in the southeastern Caliente Range, San Luis Obispo County, California: MS dissertation, California State University, Northridge, Northridge, California, 124 p.

Pisciotto, K. A., and Garrison, R. E., 1981, Lithofacies and depositional environments of the Monterey Formation, California in *The Monterey Formation and related siliceous rocks of California: Society of Economic Paleontologists and Mineralogists Symposium*.

Pollard, D. D., and Arrowsmith, J R., 1995, The temporal and spatial development of deformation and degradation along strike-slip fault bends, National earthquake hazards reduction program annual project summaries: XXXVI, v. 1, p. 149-157.

Prentice, C.S., and K. Sieh, 1989, A paleoseismic site along the Carrizo segment of the San Andreas Fault, central California: in Eos, Trans. Amer. Geophys. U., 70, 1349.

Roberts, A. E., 1981, Phosphatic Rock Localities in California: U.S. Geological Survey Open-File Report 81-260, 76 pp.

Raleigh, C.B., Sieh, K., Sykes, L.R. and Anderson, D.L., 1982, Forecasting southern California earthquakes: Science, 217, pp. 1097-1104.

Rhodes, D.D., and Arrowsmith, J.R., 1991, Variation and evolution of gullies formed on a pressure ridge adjacent to the San Andreas Fault, Carrizo Plain, California: Geological Society of America Abstracts with Programs, v. 23, p. A91.

Rhodes, D.D., Arrowsmith, J R., Kilpatrick, J.P., and Eigenbrode, J., 1998, Clay dunes at Soda Lake, Carrizo Plain, California: Geological Society of America Abstracts with Programs, v. 30, no. 7, p. A140.

Robinson, S. E., J R. Arrowsmith, D. E., Granger, and F. M. Phillips, 1998, Using remote sensing and cosmogenic nuclides to determine the geometry of alluvial fan deposits and the timing of their deposition, Geological Society of America Abstracts with Programs, 1998 Annual meeting, v. xx, p. xxx.

Rogers, T.H. 1965. Geologic Map of California, Santa Ana Sheet, California Division of Mines and Geology, California Geologic Data Map Series, 1:250,000 scale.

Ryder, Robert T. and Alan Thompson, 1989, Tectonically controlled fan delta and submarine fan sedimentation of late Miocene Age, southern Temblor Range, California: U. S. Geological Survey Professional Paper 1442, 59 p.

Sass, J. H., and A. H. Lachenbruch, 1980, Heat Flow and conduction dominated thermal regimes in Muffler, L. J. P., Assessment of Geothermal Resources of the United States-1978: U. S. Geological Survey Circular 790, p. 8-9.

Schaller, W. T., 1916, Mineralogic Notes Series 3, United States Geological Survey Bulletin #610, p. 148-9.

Sieh, K. and Jahns, R.H., 1976, 1857 Displacements along the San Andreas fault between Cholame and Cajon Pass: in Abstracts with Programs, Cordilleran Section, Geol. Soc. America, 8, no. 3, p. 409.

Sieh, K., 1976, Pre-historic large earthquakes on the San Andreas fault in the area of the Palmdale uplift: *Eos, Trans. Amer. Geophys. Union*, 57, no. 12, pp. 899-900.

Sieh, K., 1977, Late Holocene displacement history along the south-central reach of the San Andreas fault: Ph.D. dissertation, Stanford University, Stanford, California, 219 p.

Sieh, K., 1978, Pre-historic large earthquakes produced by slip on the San Andreas fault at Pallett Creek, California: *J. Geophys. Res.*, 83, pp. 3907-3939. Reprinted in *Wrench Fault Tectonics*, American Assoc. Petroleum Geologists Reprint Series No. 28, A.G. Sylvester (ed.), pp. 223-275, 1984.

Sieh, K. E., 1978, Slip along the San Andreas Fault associated with the great 1857 fault at Pallett Creek, California: in *Geological Excursions in the Southern California Area*, Abbott, P. L., ed., San Diego State University.

Sieh, K., 1978, Slip along the San Andreas fault associated with the great 1857 earthquake: *Seismol. Soc. America Bull.*, 68, pp. 1421-1428.

Sieh, K., 1978, Central California foreshocks of the great 1857 earthquake: *Seismol. Soc. America Bull.*, 68, pp. 1731-1749.

Sieh, K., 1978, Central California foreshocks of the 1857 earthquake: in *Earthquake Notes*, Eastern Section, *Seismol. Soc. America*, 49, no. 1, p. 62.

Sieh, K., 1979, Usefulness and limitations of geological studies of earthquake potential: in *Abstracts with Programs*, Cordilleran Section, *Geol. Soc. America*, 11, no. 7, p. 517.

Sieh, K. and Jahns, R.H., 1980, Late Holocene slip rate of the San Andreas fault at Wallace Creek, California: in *Abstracts with Programs*, Cordilleran Section, *Geol. Soc. America*, 12, no. 3, p. 152.

Sieh, K., 1980, A search for great prehistoric earthquakes along the San Andreas Fault, California: in *Proc. Earthquake Prediction Research Symposium*, *Seismol. Soc. Japan*, pp. 175-185.

Sieh, K., 1981, Geological studies of the Holocene behavior of the San Andreas fault, California: in *Proc. International Research Conference on Intraplate Earthquakes*, Sept. 17-19, 1979, Ohrid, Yugoslavia, Petrovski, J., ed., pp. 209-218.

Sieh, K., 1981, Is California "Overdue" for a great earthquake?: *Engineering and Science*, 44, no. 4, pp. 4-8.

Sieh, K., 1981, A review of geological evidence for recurrence times of large earthquakes: in *Earthquake Prediction -- An International Review*, Maurice Ewing Series 4, pp. 181-207.

Reprinted in Chinese in Collected Translations in Seismology and Geology, 6, no. 6, pp. 32-38, Seismological Press, State Seismological Bureau, Beijing, 1984.

Sieh, K., 1981, Seismic potential of the dormant southern 200 km of the San Andreas fault: Eos, Trans. Amer. Geophys. Union, 62, no. 45, p. 1048.

Sieh, K., 1984, Lateral offsets and revised dates of large earthquakes at Pallett Creek, California: J. Geophys. Res., 89, pp. 7641-7670.

Sieh, K., and Jahns, R.H., 1984, Holocene activity of the San Andreas fault at Wallace Creek, California: Geol. Soc. America Bull., 95, pp. 883-896.

Sieh, K.E., 1986, Advances in geological assessment of earthquake potential in southern California: in Proc. Conference XXXII on Future Directions in Evaluating Earthquake Hazards of Southern California, U.S. Geological Survey Open-File Report 86- 401, p. 73.

Sieh, K., M. Stuiver, and D. Brillinger, 1988, A more precise Chronology of earthquakes produced by the San Andreas fault in southern California, EOS, Trans. Am. Geophys. U., 69, 1306.

Sieh, K., M. Stuiver and D. Brillinger, 1989, A more precise chronology of earthquakes produced by the San Andreas fault in southern California: J. Geophys. Res., 94, 603-623.

Sieh, K., M. Stuiver and D. Brillinger, 1992, Implications of the precise chronology of earthquakes produced by the San Andreas fault at Pallett Creek: in Engineering Geology Practice in Southern California: Assoc. Engineering Geologists Special Publication 4, 195- 198.

Sherburne, R. W., March, 1988, Ground Shaking and Engineering Studies Near the San Andreas Fault Zone: California Division of Mines and Geology, California Geology, Vol. 41, no. 3, pp. 59-60.

Sims, J. D., 1988, Field Trip Guide to selected features along the San Andreas Fault near Parkfield, central California, U. S. Geological Survey Open File Report 88-360.

Sims, J. D., 1989, Chronology of Displacement on the San Andreas Fault in Central California: Evidence from Reversed Positions of Exotic Rock Bodies near Parkfield, California, U. S. Geological Survey Open File Report 89-571.

Sims, J. D., J. C. Hamilton and R. Arrowsmith, 1993, Geomorphic study of earthquake offsets and subsequent landform response along the San Andreas fault, Carrizo Plain, California, EOS Transactions AGU, 74, 612.

Stone, E. M., Arrowsmith, J R., Rhodes, D. D., and Grant, L. B., 1998, Fault Zone Geometry and Historic Displacement Along the Cholame Segment of the San Andreas Fault, Southern California, EOS Transactions AGU, 1998 Fall AGU Meeting.

Stone, E.M., Arrowsmith, J R., Rhodes, D.D., Grant, L., 1998, Fault zone geometry and historic displacement along the Cholame Segment of the San Andreas Fault, Southern California: Southern California Earthquake Center Annual Meeting Abstracts.

Taft, California, 1:100,000 scale metric topographic map of: 1981, BLM Edition-1991, Surface Management Status, Bureau of Land Management.

Tedford, T. H., Galusha, T., Skinner, M. F., Taylor, B. E., Fields, R. W., Macdonald, J. R., Rensberger, J. M., Webb, S. D., and D. P. Whistler, 1987, Faunal Succession and biochronology of the Arikarean through Hemphillian Interval in North America, in Woodburne, M. O., 1987, Cenozoic mammals of North America, Geochronology and biostratigraphy. University of California Press, pp. 153-210.

Thomas, E.A.H. and Sieh, K., 1981, Quaternary development of the Elkhorn Hills along the San Andreas fault: Sequential development of folds and thrusts along a strike slip fault: in Abstracts with Programs, Cordilleran Section, Geol. Soc. America, 13, no. 7, p. 534.

Troxel, B. W., and Morton, P. K., 1962, Mines and Mineral Resources of Kern County California: California Division of Mines and Geology County Report 1, 370 pp.

Tucker, W. B., 1921, Mines and Mineral Resources, Report XVII of the State Mineralogist, California State Mining Bureau, p. 386.

Tyler, P. M., 1935, Sodium Sulphate: U. S. Bureau of Mines: Information Circular 6933.

Vedder, J. G., and C. A. Repenning, 1965, Geologic map of the southeastern Caliente Range, San Luis Obispo County, California: U. S. Geological Survey Oil and Gas Inv. Map OM-217.

Vedder, J.G. and R.E. Wallace, 1970, Map showing recently active breaks along the San Andreas and related faults between Cholame Valley and Tejon Pass, California, U.S. Geol. Survey Misc. Geol. Inv. Map I

Vedder, J. G., 1970 Geologic map of the Wells Ranch and Elkhorn Hills Quadrangles San Luis Obispo and Kern Counties, California showing Juxtaposed Cenozoic rocks along the San Andreas Fault: U. s. Geological Survey Map I-585.

Vedder, J. G., et al, 1975, Geologic map of Cuyama and New Cuyama Quadrangles, San Luis Obispo and Santa Barbara Counties, California, U. S. Geological Survey, Miscellaneous Geologic Investigations Map I-876.

Ver Planck, W. E., 1957, Sodium Sulfate, Mineral Commodities of California, Division of Mines, Bulletin 176, p. 543.

Ver Plank, W. E., 1962, Gypsum, in Troxel B. W., and P. K. Morton, Mines and Mineral Resources of Kern County, California: California Division of Mines and Geology County Report 1, p. 197-209.

Walker, G. W., and A. P. Butler Jr., 1966, Uranium in Mineral Resources of California: California Division of Mines and Geology Bulletin 191, p. 436-439.

Wallace, R.E., 1968, Notes on stream channels offset by the San Andreas fault, in W.R. Dickinson and A. Grantz, eds., Proceedings of conference on geologic problems of the San Andreas fault: Stanford University Publications in the Geological Sciences, 11.

Wallace, R.E., 1973, Surface fracture patterns along the San Andreas fault, in R.L. Kovach and A. Nur, eds., Proceedings of the Conference on Tectonic Problems of the San Andreas fault system: Stanford University Publications in the Geological Sciences, 13, 248-250.

Wallace, R.E., 1975, The San Andreas fault in the Carrizo Plain--Temblor Range region, California, in J.C. Crowell, ed., The San Andreas fault in southern California: California Division of Mines and Geology, Special report 118, 241-250, 1975.

Wallace, R.E., 1990, The San Andreas Fault System, California, 283 pp., United States Government Printing Office, Washington, D.C..

Wallace, R.E. and S.S. Schultz, 1983, Aerial views in color of the San Andreas fault, California, USGS OF 83-98, U S Geological Survey.

Wallace, R. E., 1989, The San Andreas Fault in the Carrizo Plain-Temblor Range Region, California, South Coast Geological Society, Inc., Guidebook Number 17, San Andreas Fault, Cajon Pass to Wallace Creek, Vol. 1, pp. 411-420.

Williams, L. A., 1982, Lithology of the Monterey Formation in the San Joaquin Valley of California in Monterey Formation and associated coarse clastic rocks of the Central San Joaquin Basin California: Society of Economic Paleontologists and Mineralogists Book 25.

Whittington, C. F., 1966, Gypsum and anhydride, in Mineral Resources of California: California Division of Mines and Geology Bulletin 191, p. 188-198.

Wood, HO., 1955, The 1857 earthquake in California, Seismological Society of America Bulletin, 45, 47-67.

Wood, HO. and J.P. Baldy, 1931, Horizontal displacement along the San Andreas fault in the Carrizo Plain, California, Geological Society of America Bulletin, 42, 298-299, 1931.

Wood, P. R., et al, 1964, Geology and Ground-Water Features of the Edison-Maricopa Area Kern County, California, Geological Survey Water-Supply Paper 1656.

Wondering, W. P., Stewart, R., and R. W. Richards, 1940, Geology of the Kettleman Hills Oil Field California: U. S. Geological Survey Professional Paper 195, 170 p.

Working Group on California Earthquake Probabilities, 1988, Probabilities of Large Earthquakes Occurring in California on the San Andreas Fault, U. S. Geological Survey Open File Report 88-398.

Working Group on California Earthquake Probabilities, 1995, Seismic hazards in southern California: Probable earthquakes, 1994-2024: Bull. Seismol. Soc. America, 85, 379-439.

Young, U., 1943, Republic Area of the Midway-Sunset oil Field, California Division of Mines Bulletin 118, pt. 3.

Yeats, Robert S., Calhoun, Jeannette A., Nevis, Barbara B., Schwinn, Hans F., and Herbert M. Spitz, 1989, Russell Fault: Early strike-slip fault of California Coast Ranges: The American Association of Petroleum Geologists Bulletin v. 73, No. 9, p. 1089-1102.

Zwieback, M.D., M.L. Zwieback, V.S. Mount, J. Supp., J.P. Eaton, D. Oppenheimer, P. Rosenberg, L. Jones, C.B. Raleigh, I.G. Wong, O. Scott and C. Wentworth, New evidence on the state of stress of the San Andreas fault system, Science, 238, 1105-1111, 1987.

Miscellaneous References

Central California Resource Advisory Council Subgroup. 1999. Review of HR 751, Meeting Summary and Suggested Changes.

“Cooperative Management Agreement for the Carrizo Plain Natural Area,” Signed by USDI, Bureau of Land Management, The Nature Conservancy, and The California Department of Fish and Game.

USDI, Bureau of Land Management. 1999. Briefing Paper “Oil and Gas Resources in the Proposed Carrizo Plain NCA.” Bakersfield Field Office, Bakersfield, CA.

USDI, Bureau of Land Management, 1999. “Special Values of the Carrizo Plain,” Bakersfield Field Office, Bakersfield, CA.

USDI, Bureau of Land Management, California Department of Fish and Game, and The Nature Conservancy. 1996. Carrizo Plain Natural Area Management Plan.