

Updating MBNMS Condition Report



Monterey Bay National Marine Sanctuary

CONDITION REPORT 2009



September 2009



2015 MBNMS Condition Report Addendum

Updating status rating and/or recent trend **IF**

- new information available **AND**
- new information indicates a change is needed

2009 Condition Report

- 17 standardized questions
 - 4 Water
 - 4 Habitat
 - 6 Living Resources
 - 3 Maritime Archeological Resources
- 3 environments
 - Estuary (Elkhorn Slough)
 - Nearshore (< 30 m)
 - Offshore (> 30 m)

#	Questions/Resources	Offshore Rating	Nearshore Rating	Estuarine Rating
WATER				
1	Are specific or multiple stressors, including changing oceanographic and atmospheric conditions, affecting water quality?	▼	▼	▼
2	What is the eutrophic condition of sanctuary waters and how is it changing?	▼	▼	—
3	Do sanctuary waters pose risks to human health?	?	?	?
4	What are the levels of human activities that may influence water quality and how are they changing?	▲	?	?
HABITAT				
5	What is the abundance and distribution of major habitat types and how is it changing?	?	—	▼
6	What is the condition of biologically-structured habitats and how is it changing?	?	—	▼
7	What are the contaminant concentrations in sanctuary habitats and how are they changing?	▼	▼	▼
8	What are the levels of human activities that may influence habitat quality and how are they changing?	▲	?	—
LIVING RESOURCES				
9	What is the status of biodiversity and how is it changing?	?	?	?
10	What is the status of environmentally sustainable fishing and how is it changing?	▲	▲	▲
11	What is the status of non-indigenous species and how is it changing?	—	▼	—
12	What is the status of key species and how is it changing?	—	—	▼
13	What is the condition or health of key species and how is it changing?	▼	—	?
14	What are the levels of human activities that may influence living resource quality and how are they changing?	▲	▼	?
MARITIME ARCHAEOLOGICAL RESOURCES				
15	What is the integrity of known maritime archaeological resources and how is it changing?	?	?	?
16	Do known maritime archaeological resources pose an environmental hazard and is this threat changing?	▼	—	—
17	What are the levels of human activities that may influence maritime archaeological resource quality and how are they changing?	?	?	—

Updating status and trend

Each standard question is answered using a “status & trends” reporting system.

Status:	Good	Good/Fair	Fair	Fair/Poor	Poor	Undet.
Trends:	Conditions appear to be improving.....					▲
	Conditions do not appear to be changing.....					—
	Conditions appear to be declining.....					▼
	Undetermined trend.....					?
	Question not applicable.....					N/A

Status Rating: Have customized basis for judgments statements for each question. Does new information indicate that status has changed from one category to another in the last 5-6 years?

Recent Trend: Based on information available since the last condition report, thus the trend since 2008. Has anything happened in the last 5-6 years that has altered the previous trend such that it is significantly different?

Preliminary Results

- For many questions there is new information available that indicates a change in status rating or trend since 2009.
- In some cases management efforts have resulted in improvements in resource status or recent trend.
- Some new information indicates new concerns for sanctuary resources and potential focus for management attention.
- Davidson Seamount Environment evaluated for first time

NEARSHORE (0-30 m) Environment

Question 2: What is the eutrophic condition of sanctuary waters and how is it changing?

2009 rating	▼
2009 rating based on	<ul style="list-style-type: none"> • Clear evidence of frequent, localized, and enhanced nutrient enrichment due to both point and non-point sources • Harmful Algal Blooms (HABs) linked to freshwater runoff; • Biotoxins (from HABs) impacting health of mammals & seabirds
Key NEW Information	<ul style="list-style-type: none"> • Continued nutrient enrichment of nearshore waters in Monterey Bay • Increasing frequency of blooms of <i>Pseudo-nitzschia</i>, in addition to recent new species • Biotoxins from HABs (including new microcystin toxin) have negative effects on fish, birds and mammals.
DRAFT 2015 Status & Trend	<p>▼</p> <p>Status: Change to “FAIR” – nutrient enriched waters, HABs, and impacted living resources are generally localized, especially near river mouths in Monterey Bay.</p> <p>Trend: Keep “DECLINING” – increasing frequency of blooms of known species; new HAB species and new toxins impacting water quality and living resources.</p>

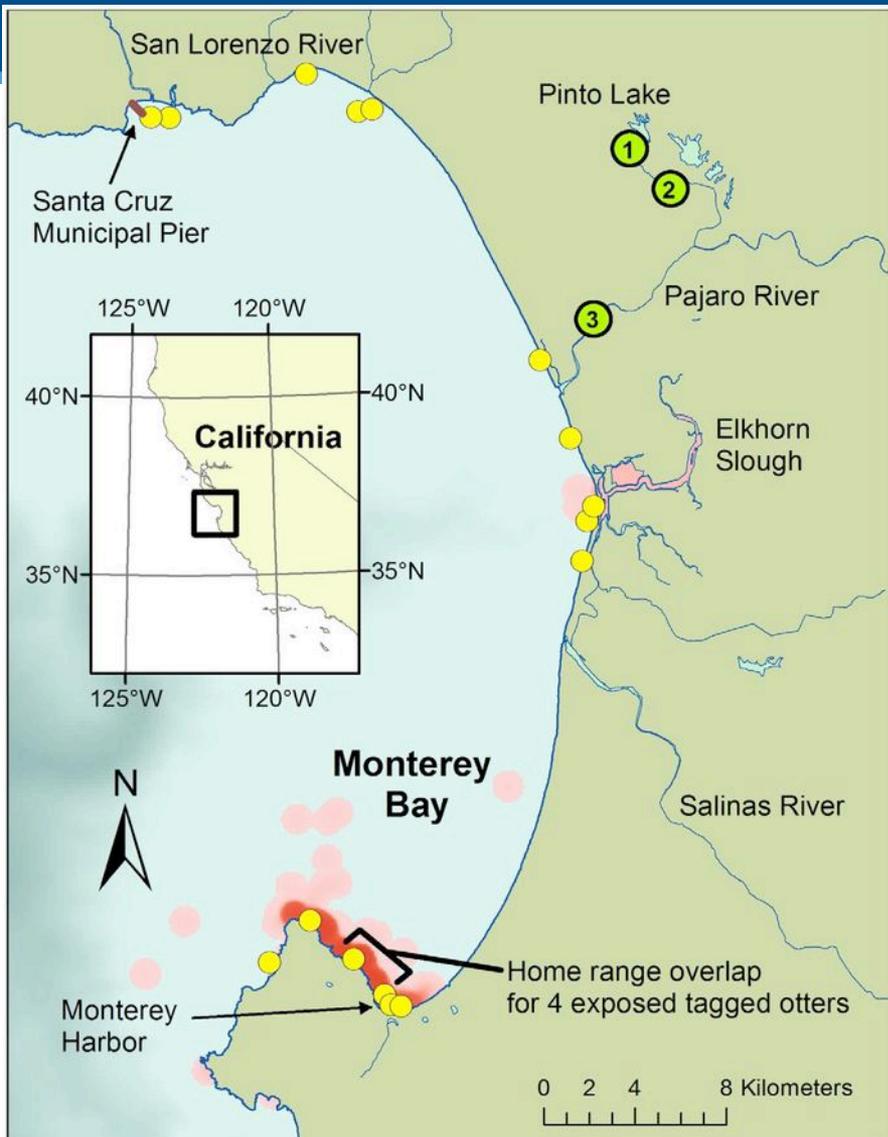
Good Few or no activities occur that are likely to negatively affect living resource quality.

Good/Fair Some potentially harmful activities exist, but they do not appear to have had a negative effect on living resource quality.

Fair Selected activities have resulted in measurable living resource impacts, but evidence suggests effects are localized, not widespread.

NEW INFORMATION

Sea otter deaths linked to new biotoxin in nearshore waters



Map shows distribution of sea otters dying due to microcystin intoxication (yellow circles).

As of 2010, at least 21 sea otters have died, most found near embayments, harbors or river mouths

Coastal nutrient loading is a predictor of microcystin concentrations in nearshore waters of the sanctuary.

Estuarine Environment (Elkhorn Slough)

Question 6: What is the condition of biologically-structured habitats and how is it changing?

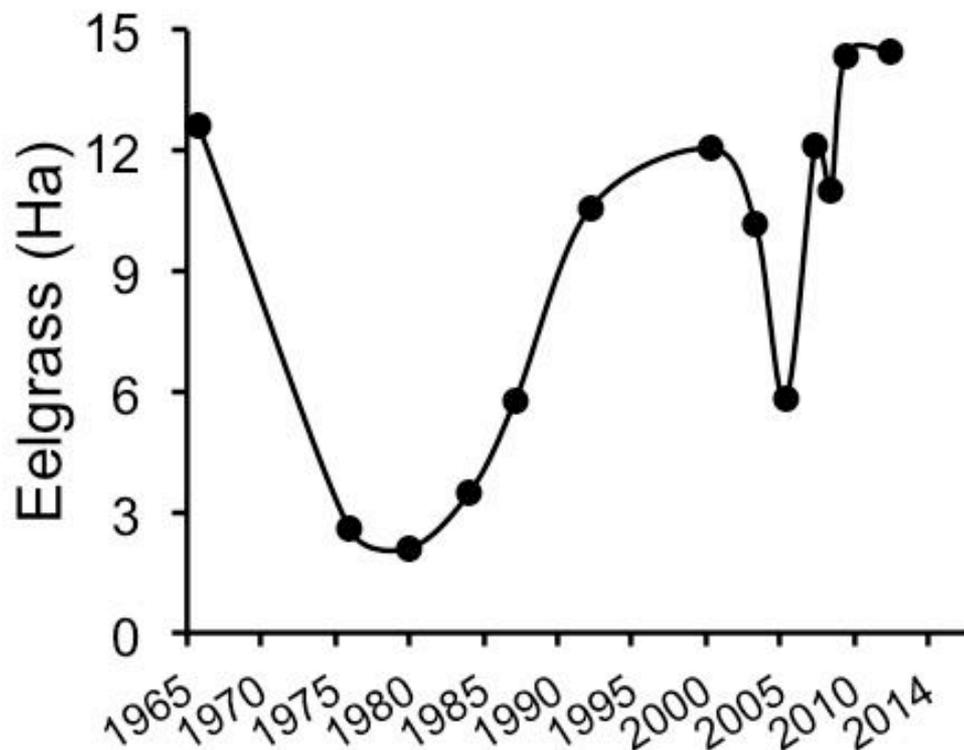
2009 rating	▼
2009 rating based on	<ul style="list-style-type: none"> • severe reductions in abundance of eelgrass and native oyster • concerns that a non-native reef-forming tubeworm was increasing
Key NEW Information	<ul style="list-style-type: none"> • aerial extent of eelgrass beds increasing slowly • Oysters remain very rare but very slight gains due to restoration efforts on ESNERR. • No major changes in cover of tube-worm or other invasive species.
Suggested 2015 Status & Trend	▲
	<p>Status: Keep 'Poor' because biologically-structured habitat is in pristine or near-pristine condition at most locations, some sites reduced abundance from trampling and harvest but that is small % of habitat in entire nearshore environment</p> <p>Trend: Change to 'Increasing' recent increases in eelgrass abundance and restoration efforts associated with native oysters</p>

 Fair/Poor Selected habitat loss or alteration has caused or is likely to cause severe declines in some but not all living resources or water quality.

 Poor Selected habitat loss or alteration has caused or is likely to cause severe declines in most if not all living resources or water quality.

NEW DATA

Eel grass continues to slowly increase in Elkhorn Slough



New information on the aerial extent of eelgrass beds in the main channel of Elkhorn Slough shows a continued slow increase in size.

Recent study presents evidence that “effects of sea otter predation on crabs has resulted in positive benefits to eelgrass beds in Elkhorn Slough.

OFFSHORE (>30 m) Environment

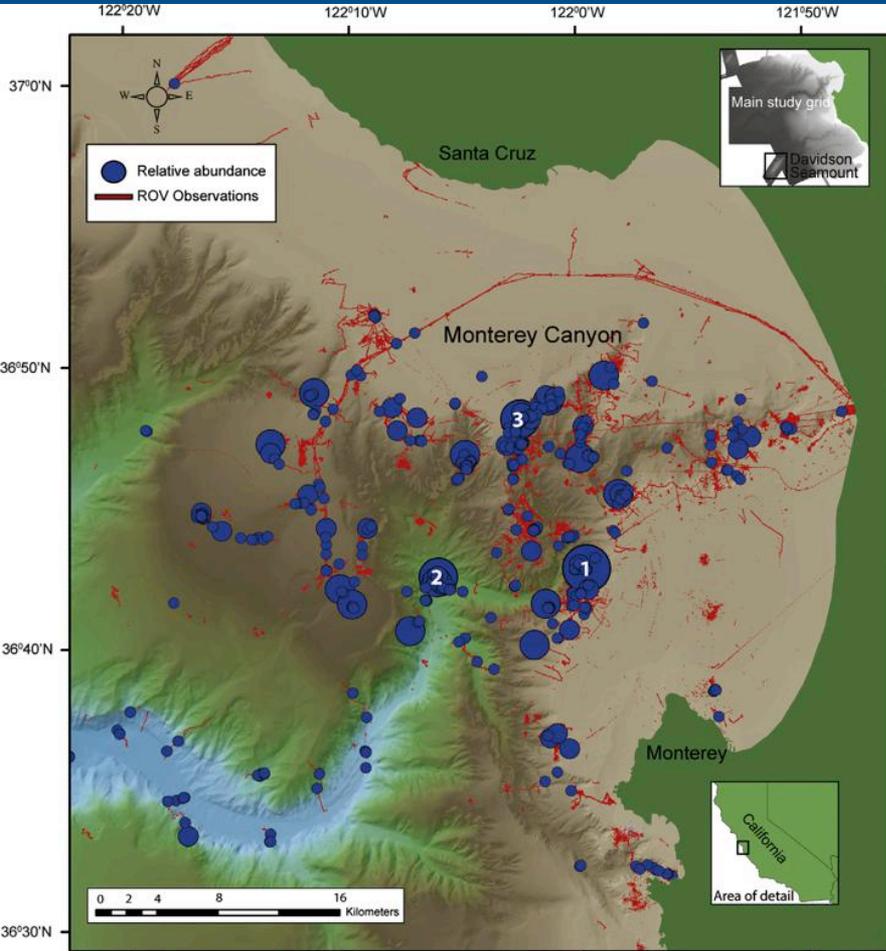
Question 14: What are the levels of human activities that may influence living resource quality and how are they changing?

2009 rating	▲
2009 rating based on	<ul style="list-style-type: none"> • Human activities (fishing, inputs of marine debris, laying of submerged cables) have resulted in measurable impacts to living resource quality • Recent changes to fisheries management has resulted in improving status of fished stocks and decreased impacts to habitat and non-target species.
Key NEW Information	<ul style="list-style-type: none"> • Marine debris in water and deep seafloor causes changes in animal community and injures and kills birds and mammals • Overall fishing activity has been steady, with some increasing and some decreasing likely in response to environmental conditions and regulations. • Large vessels are further west and spending less overall time in MBNMS
Suggested 2015 Status & Trend	<p>---</p> <p>Status: Keep “FAIR” – Human activities continue to have measurable impacts to living resource quality</p> <p>Trend: change to “NOT CHANGING” – some activities stable or improving, but marine debris & contaminants accumulating and impacting quality of living resources.</p>

Fair

Selected activities have resulted in measurable living resource impacts, but evidence suggests effects are localized, not widespread.

New Data Marine Debris Accumulating in Deep Sea



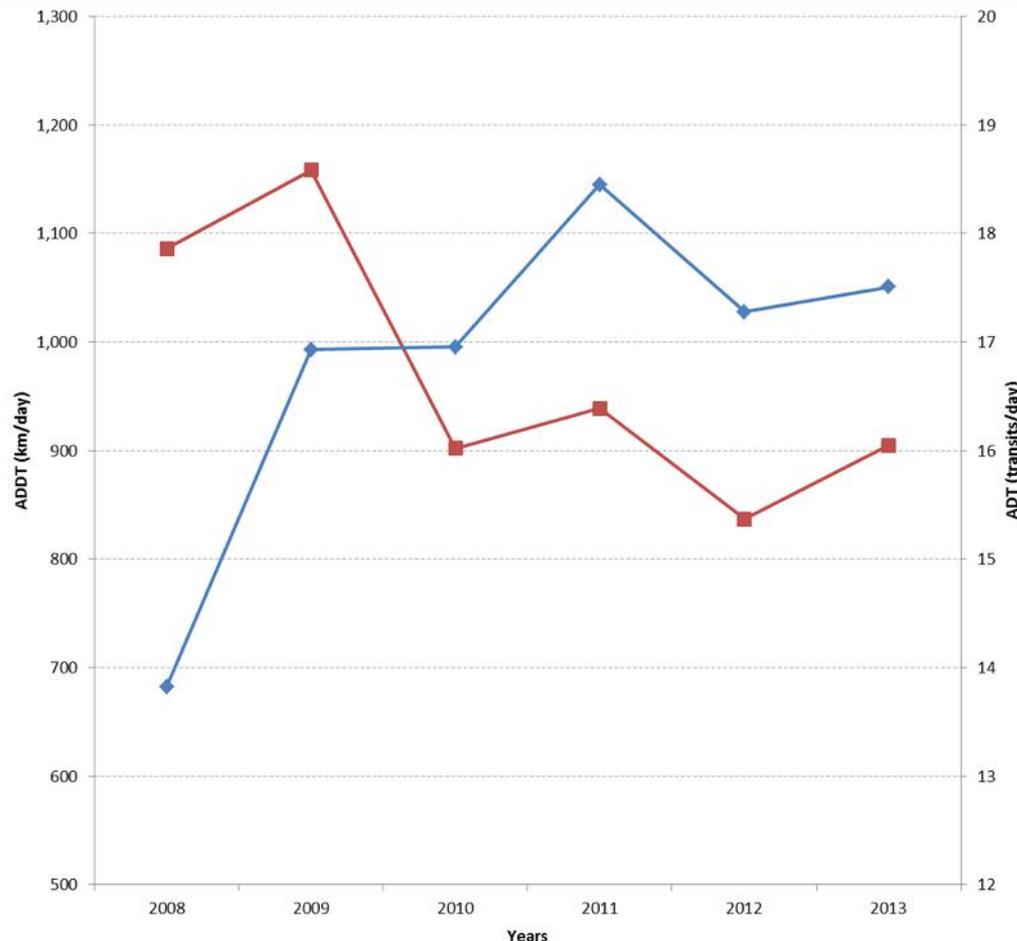
Marine debris is an increasing concern because of its potential negative impacts on living resource quality and persistence in the water and on the seafloor for decades to centuries.

MBARI has observed marine debris on the seafloor in many locations in Monterey Bay (Blue circles) and found that was most abundant in Monterey Canyon, indicating that submarine canyons collect debris and transport it from coastal to deep-sea habitats.

Study of a lost shipping container indicates that it has altered the types and abundance of seafloor animals up to 10 m away.



New Data Shows Shift in Large Vessel Traffic through MBNMS 2008-2013



The number of vessels transiting the MBNMS has increased since 2009 (blue line), possibly due to recovery from recession

but the number of kilometers traveled within the sanctuary limits have decreased (red line) because vessels seem to be transiting farther west, over time, so spending less time inside MBNMS western boundary.

Likely means decreasing impacts in MBNMS from ship strike, ocean noise, and pollutions (oil spills, air pollution)

Source: SWFSC and research in progress

NEARSHORE (>30 m) Environment

Question 16: Do known maritime archaeological resources pose an environmental hazard and is this threat changing?

2009 rating	---
2009 rating based on	<ul style="list-style-type: none"> known maritime archaeological resources in the nearshore environment believed to pose few or no environmental threats .
Key NEW Information	<ul style="list-style-type: none"> Deterioration of the freighter <i>Fernstream</i> could result in the release of hazardous cargo and/or bunker fuel and prevailing currents have a high likelihood of carrying hazardous materials into MBNMS.
Suggested 2015 Status & Trend	▼
	<p>Status: Change to “FAIR” – <i>Fernstream</i> is the highest ranked potentially polluting wreck that occurs in U.S. Coast Guard District 11 (coast of CA south to S. America)</p> <p>Trend: change to “DECLINING” – the structural integrity of the vessel is reduced and will continue to degrade over time</p>

Good Few or no activities occur that are likely to negatively affect living resource quality.

Good/Fair Some potentially harmful activities exist, but they do not appear to have had a negative effect on living resource quality.

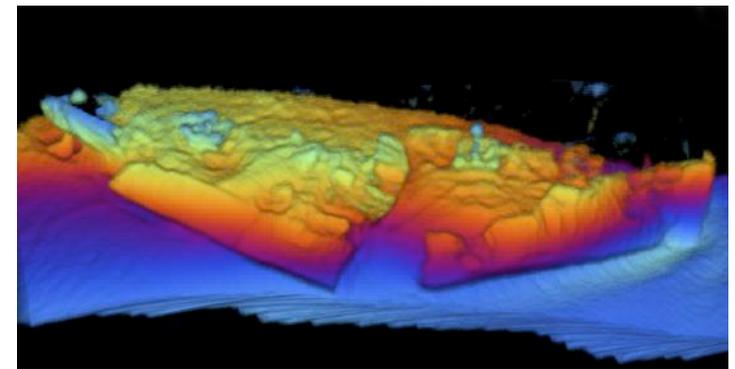
Fair Selected activities have resulted in measurable living resource impacts, but evidence suggests effects are localized, not widespread.

Fair/Poor Selected activities have caused or are likely to cause severe impacts, and cases to date suggest a pervasive problem.

NEW Information on Wrecks in MBNMS

New map of all wrecks in MBNMS inventory and NEW information on 3 potentially polluting wrecks:

Fernstream (orange pentagon and image below) is the highest ranked potentially polluting



Two other wrecks (*Jacob Luckenbach* and *Puerto Rican*) recently determined to be

