Eureka Fishing Infrastructure Discussions

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In September and October of 2025, Swan Asbury and I conducted several interviews of people in and around commercial fishing in Eureka. These interviews were designed to serve several purposes:

1. Collect recommendations for consideration by the Economic Development Commission and, for those chosen by the commission, to pass those recommendations on to the City Council.
2. Collect recommendations for consideration by the Planning Commission and, for those chosen by the commission, to pass those recommendations on to the City Council.
3. Provide on-the-ground information to be used in my white paper series on infrastructure supporting commercial fishing in Northern California ports.

While the notes themselves are worth reading in depth, here is a summary of the findings.

General Overview

Focus on challenges, opportunities, and recommendations for improving Eureka's fishing industry infrastructure.

Infrastructure & Operations

Ice Plant:

Ice is available but very expensive in Eureka ($350/ton vs. $140–$250/ton in nearby ports). There is not an easy short-term answer to this. The lease on the plant is up in 2032.

Fishermen[1] want better access and pricing; terms of the current lease may allow for improved availability. (The core access issue is hours of availability are greatly restricted in ways that don't serve commercial fishing schedules and may be out of compliance with the City's lease terms.)

Cold Storage:

Desired by many but economically challenging to operate even with grant funding.

Cooperative or nonprofit models recommended avoiding monopolistic practices.

Fuel:

Available but expensive compared to other ports; long-term solutions are elusive.

Pilings & Camels:

Recently improved and in good condition, thanks to 2025 upgrades performed by the City.

Business & Market Dynamics

Buyers:

The current situation is monopolistic. More buyers are needed; Fathom Seafood's entry raised crab prices and benefited fishermen.

Dockside Market:

Farmers market-style seafood sales; challenges include state regulatory restrictions and species diversity.

Positive customer engagement and educational opportunities.

Support Industries:

Loss of local support businesses (machine shops, net makers) has hurt the fleet.

Regulatory & Zoning Issues

Dredging:

Needed more frequently; regulations and costs are high due to environmental concerns[2].

Clean sediment but disposal is costly and restricted.

Zoning:

Debate over the City's fishing industrial district zoning; consensus to protect key waterfront areas.

Some flexibility for other uses, but risk of zoning out the fleet.

Regulatory Burden:

State overregulation cited as a major issue (e.g., CARB rules, species restrictions).

High entry costs and uncertain future for new fishermen due to permits and regulations.

Community & Economic Development

Beautification & Tourism:

Improving waterfront aesthetics and adding restaurants could help industry perception and customer base.

Tourism strategy going forward should more intentionally celebrate Eureka's working waterfront and pride in the fleet.

Events:

Support for cultural events like crab festivals, though timing is difficult due to regulatory unpredictability.

Business Development:

Calls for more robust waterfront uses (restaurants, fish processing, tourism).

Comparison to Newport, Oregon as a model. Bellingham, Washington has also been recommended as a successful model.

Workforce & Future Challenges

Workforce Training:

Lack of relevant training programs for commercial fishing in California.

Traditional entry paths (family, deckhand) less available.

Young Fishermen:

High startup costs and uncertain future deter new entrants.

Some optimism for adaptation and innovation among younger fishermen.

Security & Workspace:

Need for better security, storage, and workspace for fishermen.

Specific Recommendations for Consideration

To be clear, one or both of the Economic Development Commission and the Planning Commission would consider these recommendations and choose which if any to forward to the City Council.

Improve ice plant access and pricing.

City staff should investigate options with current lessee to meet their lease obligations to improve access. If that lessee is able to improve the situation and meet the lease requirements for access, that helps with part of the issue.

If the lessee will not step up to meet the lease requirements, the City should consider breaking the lease and securing a tenant or tenants who will provide reasonable access to ice.

In parallel, private industry and fishermen may want to seek additional options for provision of ice at a cost competitive with what is available in Fort Bragg and Crescent City.

Develop cold storage with cooperative/nonprofit models.

Cold storage solutions are difficult and potentially expensive. Still, the wide need for better cold storage might best be viewed as similar to providing roads, in that the roads themselves don't bring in revenue, but they are necessary to commerce.

A recent cold storage study by Cal Poly Humboldt students, an update of a 2015 study by Greenway partners, and that original study itself, represent places to start.

Multiple constituents believe that cooperative and/or nonprofit models hold the best potential for long-term, fair access.

Next Step: Recommend a path forward

Lead: Economic Development Manager

Recruit additional buyers and support local processing. Advertise Eureka's marine services in national or West Coast fishing publications

This would best be a partnership between the City and the private sector, probably including the Humboldt Fishermen's Marketing Association.

Lead: Economic Development Manager

Address dredging regulations and costs.

This is an easy recommendation to make, but likely a difficult one for the City to implement. The City, and its partners in Humboldt Bay, should continue to seek dredging opportunities to assist commercial fishing and other current users of the bay.

Lead: City Manager, with the Harbor District and Army Corps of Engineers

Protect and optimize zoning for commercial fishing.

Protect the zoning of the Fishing Industrial District, a four-block area, to disallow interim and non-conforming uses and clearly prioritize legitimate working waterfront/fishing industry uses only.

Lead: Director of Development Services

City Leases.

Re-evaluate waterfront city property management in the Fishing Industrial District and amend all rental and lease agreements with the addition of a performance clause that succinctly states that city assets leased for fish unloading, processing, and storage require those activities to occur throughout the calendar year at levels significantly high enough to make full-time use of the leased asset.

Lead: Community Services

Support entrepreneurial ideas and business development.

Economic Development Manager Swan Asbury participated in the interviews foremost with an ear to understand the situation and to potentially help with opportunities, some of which are already happening. This effort should continue.

Lead: Economic Development Manager

Enhance workforce training and support for new entrants.

This is primarily a function of the private sector and K-14 educational institutions. The City itself does not have a primary role.

Notes from Interviews

Ian Roberts, Travis Hunter, Harrison Ibach & Miles Slattery

Roberts, Hunter & Ibach are all commercial fishermen[1]. Together, their target species include crab, groundfish, tuna and salmon. Gear types include trawl & non-trawl, hook & line, and pots. Slattery and Asbury are City Manager and Economic Development Manager for the City of Eureka.

Ibach estimated that, at the height of a normal crab season, about 75 boats will be fishing out of Eureka. That includes a few from out of town, so the estimate found elsewhere of 50-70 working fishing boats in the harbor seems reasonable.

There is ice available, but it's very expensive, approximately $350/ton in Eureka v. $140/ton in Crescent City and Brookings and $250 in Fort Bragg. A more accessible, fishermen-friendly ice plant would be the top item on the wish list. (Accessibility may be something that can be fixed quickly. If City Manager Slattery is correct, the lease from the city to the tenant states that they have to be available on demand, rather than the current reported schedule of 9 a.m. to 2 p.m. Slattery will look into this and, if he's correct about the lease terms, will pursue it.) Maintenance of the current ice plant, which is 15 years old or less, appears inadequate. A new ice plant is estimated to cost $1.7 million, not counting ongoing operational costs.

Cold storage would be nice, but economically difficult. Slattery, Hunter, Asbury & Kraft all have some kind of experience in the economics and, even if the plant is grant-funded, operations and maintenance often don't pencil out.

Additional buyers, at least one, would prove beneficial. The majority of the catch by these fishermen goes through traditional buyers. But non-traditional distribution, such as the Dockside Market and off-the-boat sales, do help smaller operations gain better prices. It was believed that, while off-the-dock sales are allowed on Woodley Island, they are not permitted on the "Eureka side" by city code. (Kraft note: City Manager Slattery researched this and found that such sales are permitted at the Eureka Marina.)

A success would be the recruitment of the buyer Fathom Seafood. They offered crab prices 25 cents a pound higher than the existing buyer(s). This caused those buyers to raise their offer to match. This also put an upward pressure on prices in nearby ports, so that a good number of fishermen earned more for their catch.

The Fathom success was possible because of the hoist leased from the city by the Humboldt Fishermen's Marketing Association, which they in turn provided for Fathom's use. HFMA also received a grant from the Headwaters Fund to acquire a forklift.

Dredging, more frequently and regularly, would be helpful. Current regulations limit the ability and methods by which the city and the harbor district can dredge. Slattery pointed out that dredging has occurred for 80 years, and that the sediments are the cleanest they have ever been during that period. He believes that this should make dredging subject to fewer rather than more regulations, and therefore the costs should be reduced. “All of that fucking sand would be on the north beach if it wasn’t for the fucking jetties.” But the spoils, clean fines, cannot be deposited on the beach and it costs a lot to tow it to the designated site 3 miles offshore. Also the listing of the longfin smelt precludes the more efficient kinds of dredging as options. It’s a tough nut to crack, with EPA, Coastal Commission, and the Army Corps of Engineers all having a say.

Fuel is available, but expensive. This is a Humboldt issue, as fuel that comes through the infrastructure in Eureka is available at lower prices in Fort Bragg and Crescent City. While temporary fixes might be available, a long-term fix appears elusive.

In a bright spot, pilings and camels are in great shape due to recent work by the city.

There was some discussion of zoning. Slattery is of the opinion that we can’t zone our way into a successful fishing fleet. Kraft and Ibach agreed to an extent but noted that we could zone ourselves into a place that we could preclude a successful fleet. The city planning staff are proposing a fishing industrial district that applies to C to Commercial Streets and to parts of Woodley Island. Fishing would be principally permitted. They are leaning toward some other uses being possible, likely with some kind of use permit/discretionary review. Speaking on Coastal Dependent Industrial zoning, Ibach said “we don’t need to be bigger. We need to make better use of what we have.”

A few miscellaneous notes from the meeting:

- Beautification of the waterfront would help the industry in perception. More restaurants would provide additional potential customers.
- Dredging costs are an issue for the bay’s jurisdictions. Some latitude in how to make money for the jurisdictions will help pay for dredging.
- There is a lack of consistency and predictability in regulations and infrastructure. Relief from agencies like the Coastal Commission and State Lands would prove helpful.
- Entry costs are high relative to historical levels
- Oregon ports offer more of the amenities that are named as lacking, above
- The fleet suffered as support industries withdrew, such as machine shops, net makers

Ken Bates & Linda Hillenbrand

Ken Bates and Linda Hillenbrand fish for salmon, when there is a salmon season, and they supply bait caught from Humboldt Bay for boats fishing offshore for species like albacore. They have a side business supplying small nets and other fishing equipment.

Ken described how he sees historical trends on Eureka's waterfront. In 1965, the city had the largest fishing fleet on the West Coast. A consultant to the City recommended that the City take control of the tidelands and develop a mixed-use, tourist-friendly waterfront. Over time, Eureka did this. Some of the tidelands went under or through the buildings and dock infrastructure of private companies, and neither the businesses nor the City took good care of them, causing deterioration. The City also took steps to move the fishing fleet partway across the bay, to Woodley Island.

There were efforts to provide infrastructure to support the fleet. A long (18-year) effort resulted in the funding and construction of the Fishermen's Terminal. However, liberal interpretation of laws by city staff allowed for the placement of a restaurant where a fish market was intended to be. There is a debate about whether that was legally appropriate, given the zoning and funding sources, but all agree it's a good restaurant.

Ken and Linda recommend several policies:

- No interim nonconforming uses in the Fishing District (C to Commercial and the relevant parts of Woodley Island)
- A business plan for those districts
- Funding of an ice plant with better prices, better access and a philosophy of supporting rather than gouging fishermen (as reported in the notes from an earlier meeting above, Eureka's prices are $100 - $200 a ton higher than ports like Crescent City and Fort Bragg)
- City staff help South Bend with some of their entrepreneurial ideas
- Support cultural events; ideally, something like a two-day crab fest, though the unpredictability of crab season dates given regulations and domoic acid concerns make this specific festival difficult.

Ken and Linda worry about younger people who would like to fish but face very high startup costs and a truly uncertain future in the industry. Permits can be six figures, and a boat is at least six figures. Uncertainty also means that an expensive permit does not necessarily provide the right to fish, as seasons can be restricted or cancelled while the permit costs the same.

MK note: A couple of weeks after this interview, Mr. Bates sent a document to the working group, plus Miles Slattery and Mayor Kim Bergel. In it, he reiterated the history that led us here,

and provided four recommendations he believes would be cost-effective ways to revitalize the industry and the working waterfront:

1. **Zoning**: Specifically amend zoning descriptive language for the "Fishing Industrial District" to **disallow interim and non-conforming uses** and instead clearly prioritize legitimate working waterfront/fishing industry uses only. It has been accurately stated by city management that "we can't zone ourselves into prosperity," but looking at the resulting failed waterfront gentrification efforts of the past 50-plus years, we can certainly zone ourselves out of prosperity! And we have done it. Plus, we are only talking about four city waterfront blocks!

2. **Leases**: Re-evaluate waterfront city property management in the Fishing Industrial District and amend all rental and lease agreements with the addition of a performance clause that succinctly states that city assets leased for fish unloading, processing, and storage require those activities to occur throughout the calendar year at levels significantly high enough to make full-time use of the leased asset. If the city is only interested in monthly rental income, devoid of any contributing economic activity to the community's well-being, then just continue to rent to some of the existing tenants, who appear to be tying up those city assets in order to keep legitimate fishing industry players out of Eureka.

3. **Advertising**: Certain politically and community-engaged fishermen have requested for years that both the City of Eureka and the Humboldt Bay Harbor District run monthly ads in print and online fish business periodicals to alert prospective marine businesses about opportunities in Eureka. This has yet to be done. At present, fishing industry businesses have no way to find out that hoists, dock space, offices, or processing space even exist in Eureka.

4. **Partnerships**: Assign a person in planning or economic development to work with the nonprofit California Fishermen's Resiliency Association to co-apply for grant funding for improvements and maintenance of fishing infrastructure critical to economic activities on the working waterfront. The city's successful efforts to fund and replace the dock fendering pilings at the Eureka Fishermen's Terminal is a perfect, significant, long-term example of this work.

Ashley Vellis

Ashley runs *Ashley's Seafood*, a value-added, wild-caught seafood brand. Her husband Travis owns and runs the commercial boat *Aguero*. She is also a spearhead of the Eureka Dockside Market, a farmers market approach for seafood sales.

The first year for the Dockside Market was wrapping up at the time of the interview. Ashley reports that keeping vendors has been difficult, especially for the period that the State of California made and enforced a policy called the 50 Fathom Rule. This rule was eventually found to be in error, but while it was in force it effectively limited groundfish catches for the smallest boats. However, Ashley reports that those fishermen who were able to participate are "all in." Other challenges this first year included some unfortunately timed weather. Species diversity (that is, the species available for sale on a given day) is low relative to some other public markets, but that is not a one-year phenomenon, that is the nature of North Coast fishing. Still, there could be a chance for some additional species to be supplied by nearby parts of Oregon. Ashley reports that customer flow has been good, with some boats performing text marketing programs that in some ways resemble community supported agriculture.

The market allows people not just to buy local seafood, but also to ask hard questions. It creates a market that is welcoming and allows people to learn about the sustainability of California seafood.

Ashley and her husband have pivoted in their businesses several times. "This is for our families," she says. She remains optimistic about making a living, buying a house and being able to eventually afford a decent retirement.

Still, as others have said, barriers are high. The monthly payment on the boat is $4000. It's hard to find investment, especially in California. The state also doesn't have workforce training that is relevant to commercial fishing. It has been traditional to either be part of a generational fishing family, and to be raised in part on a boat, or to serve as a deckhand and learn the ropes. While these avenues remain to some extent, they are not as available as they have been historically.

Also, from an employer perspective, Ashley says that finding deckhands who are capable and drug-free is challenging. Despite the challenges, the *Aguero* does employ two local deckhands. Ashley and her husband also live nearby. They considered moving their fishing efforts to Oregon but ultimately chose to tough it out in Humboldt.

If she could have one thing fixed in Eureka, it would be cold storage. *Ashley's Seafood*, along with the *North Coast Growers Association*, collaborated with Cal Poly Humboldt students to update a 2015 study on cold storage options for Eureka. As the 2015 study stated, choosing the right organization and structure for running a facility is key. Ashley mentioned a cooperative in Alaska as a possible model. The 2024 Cal Poly study recommended either a cooperative or a

nonprofit model over a for-profit approach, in part to avoid monopolistic actions and price-gouging that fishermen in Eureka report that they deal with.

As to the ice situation, Ashley was blunt in her advice to the City: “Take it over. Figure it out. We’ve kicked the can down the road as far as we should.”

David Rominger

David Rominger runs South Bend Products’ facility in Eureka. He was a deckhand prior to that.

David believes there are still paths for young people to become commercial fishermen. That said, he also would give this advice to a Californian who wanted to do this: “go north,” at least as far as Oregon. People can still do it locally, but there is more opportunity to the north.

David does not like fishing boats simply getting checks as remediation for disasters and impacts. He believes that money should go to things that allow fishermen to continue fishing.

He has some entrepreneurial ideas which, now having met Swan, he plans to pursue with the City.[3]

Like Ashley Vellis, he advocates for cold storage.

Like Harrison Ibach, he believes that robust uses of the waterfront would figuratively lift the boats of the fishing fleet. He listed restaurants, the Nordic fish farm, additional fish processing facilities, and events/programs that bring together tourism efforts with the fleet. He believes Newport Oregon might provide a good comparison. He supports business development on Woodley Island, including non-fishing uses such as an RV park, if it helps pay for needed dredging.

He calls Eureka “a sinkhole for freight,” meaning it is comparatively difficult and costly to ship things in and out.

In general advice, he pleads for the ability for people “to do stuff.” Camp near the waterfront. Process Shrimp.

Leroy Zerlang

A legend on Humboldt Bay, Leroy Zerlang's businesses include boat repairs, hauling, running tugboats, salvage, dredging, spill response, some construction and the Madaket, California's longest-running ferry. He works on boats that generally work out of the ports of Del Norte, Humboldt and Monterey counties.

Asked what the city could do to support commercial fishermen, Zerlang immediately pivoted to what he describes as intense overregulation by the State of California, including rules coming from domoic acid, salmon scarcity, and whale entanglements. "Criminal!" He mentioned that his salvage operation had broken up five small commercial fishing vessels in the week prior to our interview. He said Eureka has lost 20 boats to Oregon in the last year, due to fishermen feeling the need to escape California laws. "The way they go about it is backwards," Zerlang said.

He sees a cataclysm for small fishing boats, and other vessels, in five years. Saying it was already happening, CARB (California Air Resources Board) regulations that kick in fully five years from now will decimate the fleet. Zerlang believes that larger businesses and larger boats will come out okay, as economics are in their favor. But the small businesses and smaller boats are in trouble. Zerlang says his businesses will spend an estimated $1.1 million to comply with the new CARB rules.

Zerlang knows fishermen, the good and the bad. For the most part, he believes they are good people. "But there's also a bucketful who are bad." He roots for younger fishermen and has hope that some of them will be able to turn the corner and make it in the coming regulatory environment. For example, he believes younger fishermen[4] will be able to invest in and adapt to using pop-up crab pots.

Returning to what the city can do, Zerlang says that job one is to deal with Pacific Choice. "Why the hell is that building closed?" It has the ability to provide ice, freezers, fileting and cooking. He also believes operation of the ice plant would be better handled by someone other than Pac Choice, perhaps the Humboldt Fishermen's Marketing Association (HFMA) or Englund Marine.

Other recommendations from Mr. Zerlang include:

- We need additional buyers (historically, there were as many as 27, now there are one or two)
- We should seek to process crab locally again. There are water and wastewater issues, to be sure, but not the volume associated with shrimp processing
- Fuel cost in Humboldt Bay is high. It actually pencils out for Zerlang to run his boats up to Oregon to buy fuel at their lower price, and then motor back

- His views of the HFMA are complicated. At one point, he said “it’s a joke.” But later, he allowed that the association is improving.
- Everything starts with access to ice
- We need better cold storage, and some of it should be on the waterfront (“A structure has to be built somewhere”
- Fishermen have no workspace
- There’s a need for storage
- Security is an issue…boats, gear, the people themselves should have better protection
- Although there may be limitations the area behind the Bayshore Mall is ideal for fishing infrastructure
- There is also the acreage near Dock B
- He would put a hotel at Redwood Marine Terminal
- One or two of the current hoists are problematic. The right hoist costs about $72,000
- Get the logs out of the Fishermen’s Terminal
- The loss of meaningful recreational salmon seasons has been a large financial loss

Asked about zoning, Zerlang said that the area from C St to the south end of the boat basin should be zoned to protect commercial fishing. This is similar to the views of Harrison Ibach and Ken Bates, although Zerlang’s ‘district’ extends further to the south where theirs would end at Commercial Street

Asked about offshore wind development, Zerlang’s opinion is nuanced. He sees it as likely good for the economy of Humboldt Bay. “It’s a good niche for my son,” who works in the family businesses, “but the way the Harbor District has sucked (up) is sad.” He expressed doubts about the stability of the equipment 23 miles offshore in water 2800 feet deep.

Zerlang went on to discuss his disagreements with the Harbor District. Though good for the economy, Zerlang sees multiple problems with port development. The amount of dredging required could and likely would cause greatly enhanced erosion of the beaches to the north. Visually, the Bay would look much different. He described the recent funding of studies for the Port’s planned Heavy Lift Terminal as throwing good money after bad.

The interview ended with Mr. Zerlang describing the issues he saw up close with placing metocean buoys[5]near the Humboldt Wind Lease Area for the offshore wind developer RWE, an experience that added to his skepticism about wind equipment going into the area. “We placed the first buoy. It lasted 2-3 months before it had the hell beat out of it. We placed the second one, same thing three months later. We placed one more.”

David Tyson

Dave Tyson is a former City Manager of Eureka and served at a time when significant investments were being made in commercial fishing infrastructure.

He went over highlights of the city's Waterfront Revitalization Plan from his time at the city. Revitalization efforts began in the late 1980's, with a multi-faceted set of constituents comprising a task force. From there, "we started trying to tick things off of the project checklist," Tyson said. This included things like securing a large EDA (Economic Development Administration) grant to rebuild the boat basin. There was significant work put in on commercial docks at the foot of C Street. An emergency grant was secured from the Headwaters Fund to fund an upgraded ice plant when the existing one failed.

Tyson has neighbors who are commercial fishermen. They tell him that, if they could wave a magic wand, they would have more access to a hoist.

Tyson spoke about the community consensus that was forged back in the late 80's/early 90's that agreed to protect the district from C Street to Commercial Street. "Is protecting C to Commercial still necessary? I don't know…but I think so."

End Notes

[1]As Ms. Sarah Bates wrote in a white paper on commercial fishing in San Francisco, '"fishermen" is an unfortunately gendered word, but there is no better alternative. We are not all men, and the fleet has never been all men. Within our community, "fishermen" is the widely accepted, gender-neutral plural for the men and women who make their living in the commercial fishing industry. Much like "you guys" refers to any group of people in modern usage.' References to "fishermen" in this paper are used in this way."

[2] City Manager Slattery noted that "Due to lack of pollutant contributing industry on the Bay, contamination levels have dropped by orders of magnitude. Need support from all community organizations to support beneficial re-use of the dredge spoils, up to and including beach disposal. The sediment entering the bay and being deposited around the manmade jettys would naturally be deposited on the spit if man hadn't made the changes. This is where the material most logically should be placed, as sediment contamination is no longer an issue."

[3]Development Services Director Cristin Kenyon wrote "…for the fishing district, just to clarify, that is currently zoned Coastal Dependent Industrial (CDI) and we currently have very restrictive zoning with no interim use provisions for non-CDI uses. Maybe your recommendation is to <u>not add</u> interim use provisions as part of the LCP update?

The only provision currently that allows non-CDI uses in the CDI zone is an accessory use provision – The LCP says "commercial uses incidental to the primary coastal dependent industrial use" are allowed in the Core CDI area (C St to Commercial St) with a Conditional Use Permit. This was added through a 2008 LCP Amendment certified by the Coastal Commission. That amendment also added a definition: "Commercial Uses Incidental to the Primary Coastal Dependent Industrial Use – those certain commercial uses allowed within the Core CDI Area which are minor in significance, and subordinate and directly related to the primary coastal-dependent industrial uses for which the area is designated. Commercial uses incidental to the primary coastal dependent use include, but are not limited to, retail sales and services of goods produced or functional work provided at the site, such as fish markets or seafood restaurants at commercial fish processing facilities, and facility tour areas." Before 2008, the area between C and Commercial Streets was all zoned Commercial Waterfront but had a land use designation of Core Coastal Dependent Industrial. That same LCP amendment changed zoning from CW to CDI to be consistent with the land use designation (excluding Vista Del Mar and Carriage Property).

[4]*Mr. Rominger shared specific business ideas but, as these contained proprietary information, the details are being withheld.*

[5]*Mr. Zerlang named several young fishermen he thinks highly of, although only by first name: Travis, Travis, Jason, Harrison, Ashley.*

[6]*A metocean buoy is a floating platform that collects meteorological and oceanographic data, such as wind speed, wave height, water pressure, and ocean currents. These buoys are used for a wide range of applications, including supporting offshore industries like wind energy and oil exploration. The company involved with the buoys in question, AXYS, contend that they are engineered to be stable in various sea conditions. However, the extremes of the ocean off Humboldt defeated the buoys within months. There is also controversy attached to the abandonment of the roughly 11,000-pound block and chain assembly.*