

Fishing Gear Recycling and Disposal Options and Guidelines
prepared for West Coast Governor's Agreement on Ocean Health
Derelict Fishing Gear Workshop March 2010
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Environmental Protection Agency's Waste Hierarchy

Most preferred→	Source Reduction & Reuse
	Recycling/Composting
	Combustion with Energy Recovery
Least preferred→	Landfilling and Incineration without Energy Recovery

RE-USE

Gear in good condition that may be found in beach clean-ups or during derelict gear recovery efforts is often wanted back by the fishing community. Some derelict gear recovery programs make an effort to locate owners of found gear or make unclaimed gear in good condition available for re-use by the fishing fleet. Sale of such unclaimed gear can help provide some financial support for the clean-up effort.

Nets, old buoys, crab line and bait holders, and other fishing gear are items that are sometimes in demand for decorative, artistic, or other purposes.



PSMFC has worked at various times since 1988 to assist the fishing industry with recycling of fishing gear. Our work has included recycling and MARPOL disposal facility work with the Port of Newport and other ports on the west coast, gillnet recycling efforts in Oregon, Washington, and Alaska, and a feasibility study for gear recycling in Dutch Harbor and Kodiak. Support for those efforts have come NOAA's Saltonstall-Kennedy and Marine Debris Programs, the Environmental Protection Agency, the National Fish and Wildlife Foundation, and the Marine Conservation Alliance Foundation.

RECYCLING OF FISHING GEAR

Background: The recycling of fishing gear, whether it be used, non-repairable gear in a fisherman's gear locker, gear found on beaches during clean-ups, or derelict gear recovered at sea, is similar to the recycling of other items in our society and is subject to the same market forces, handling and shipping considerations. The bulkiness and multiple components of gear create additional complexities. The recycler for all current fishing net recycling efforts on the West Coast is Skagit River Steel and Recycling located in Burlington, WA. Gillnets from Astoria, Oregon have been sent to another plastic recycler, Agri-plas in Brooks, Oregon on one or two occasions, however such fibrous plastics are not the type of materials usually accepted (this facility generally handles agricultural pots, jugs and containers, agricultural film, and the like) and the company didn't encourage further shipments. However, the Agri-Plas facility has been used to recycle the plastic pot identification tags used in Oregon Department of Fish and Wildlife's crab limited entry program.

OPTIONS FOR GEAR RECYCLING

Important note: Derelict gear, especially gear recovered from shallow water, is often fouled with organic materials. This gear is not acceptable for recycling. Derelict gear without organic fouling but with gear (e.g. cork and lead line or metal cable) that is twisted up within the webbing may be able to be recycled but will not have any revenue potential, and in fact may incur a cost to recycle. However the cost to pay for recycling will often be considerably less than disposal in a landfill.

For free or possible revenue from gear recycling, the following handling requirements apply:

Gillnets

Materials Accepted:

Gillnet webbing (**nylon type 6**):

Corkline from gillnets

Leadline from gillnets

Locations accepted: These materials are accepted at the Skagit River Steel and Recycling facility in **Burlington, Washington** and in the following fishing harbors:

Oregon: Port of Astoria, thru Columbia River Fishermen's Protective Union

Washington: Squalicum Harbor, Bellingham, Cap'Sante Marina, Anacortes, Fishermen's Terminal Seattle, WA

Alaska: Dillingham, Naknek, Cordova, Kenai, Petersburg
(and in 2011 possibly Douglas and Kodiak, AK)

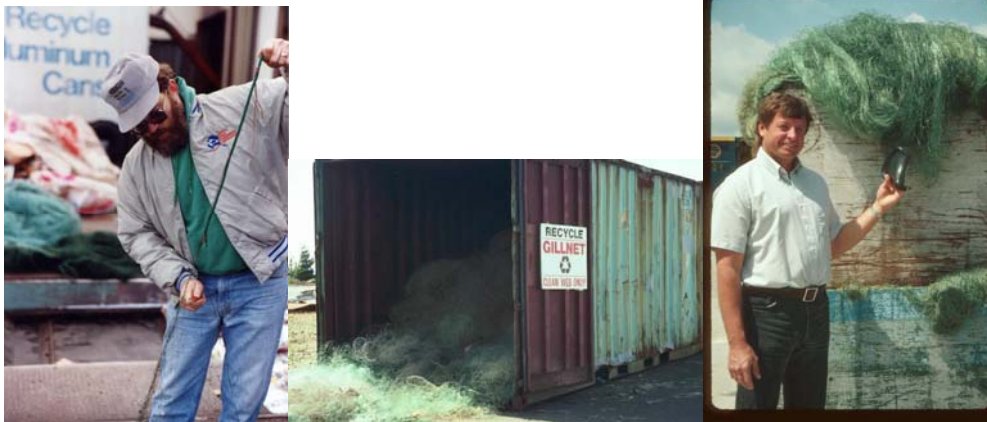
Standards:

- * No organic material, rocks, gravel etc. in netting.
- * Cork line, leadline, weedline must be removed.
(corkline and leadline can be recycled, but each must be kept separate)

* Web must be bundled and tied tightly with hanging twine or placed in bags or “tarps” of web.

Revenue potential:

Nylon material is valuable and if well prepared and in volume can be worth 7-10 cents a pound (2010).



Seine nets (nylon type 6,6): Seine nets are composed of nylon of a different type than gillnets. It can be taken to the same facilities as above and can be recycled but must keep separate from gill nets. The same standards apply (no organic materials, no corks or other gear, etc.) These nets are sometimes coated with asphalt or tar, but to date this hasn't been an issue for recycling.

Trawl nets (nylon, HDPE, and mixed fibers):

For free recycling, the following handling requirements apply:

Nets must be clean and have no gear (cable, rubber, buoys etc.) to be accepted for free at the Port of Seattle's Fishermen's Terminal. ** Metal cables and other metal gear from the nets may be recycled. Recyclers have different standards. Some may accept cable that is coiled and tied, while others may require cutting into 5' lengths if they will accept the material without a fee..

Clean trawl net with gear can also be recycled but at a small cost (about 2-3 cents/lb). Those wanting to dispose of such gear should contact **Skagit River Steel and Recycling** directly and make arrangements for pick-up. They will accept nets brought to Fishermen's Terminal or their facility from out of state fishermen and the Port will assist with offloading.



** Support for Port of Seattle's efforts to help fishermen recycle their trawl net is from the National Fish and Wildlife Foundation

Revenue potential:

Different parts of the trawl net are made of different plastic fibers. Old style nets are part nylon, part high density polypropylene, newer nets may have poly coated nylon fibers and other polyester fibers. Without separation there is currently little market for small quantities of webbing. In large quantities webbing (without gear) could command a few cents a pound.

Monofilament fishing line (nylon):

The Berkley Company has worked with volunteers and sport fishing groups in various areas to provide containers for collecting line and will accept collected line for recycling. The line needs to be shipped to them in Iowa and is recycled into underwater structures for lakes, reservoirs and ponds. On the West Coast for example, bins are available on several piers from Monterey to Imperial Beach, California as well as in Oregon***
See: <http://www.berkley-fishing.com//media/File/063136BCIbrochure.pdf>

*** CA's monofilament line recycling effort was funded by NFWF, but has reportedly suffered from a lack of financial support to keep things moving forward. In Oregon, 36 lbs of line were collected from 26 recycling stations in 2006. Subsequently, ODFW's Fish Restoration and Enhancement program provided 50 additional collection stations for \$8100.

Crab Lines: Crab line is polypropylene and floats. This line is not recyclable but, maybe able to be provided for re-used by others. On the east coast, for example, where floating line is no longer allowed to be used (for protection of the endangered right whale) door mats are being made and sold as a promotional/marketing item to highlight the whale-protection effort.

Crab Pots:

Metal from crab pots is accepted by many scrap metal dealers, including Schnitzer Steel (see waste to energy information below).

Miscellaneous:

Plastic crab pot identification tags used in Oregon's limited entry program have been recycled by Oregon Department of Fish and Wildlife at the Agri-plas facility in Brooks, Oregon

WASTE TO ENERGY – DISPOSAL OF FISHING GEAR

The fishing gear waste to energy program was piloted in Honolulu for derelict gear collected off remote Hawaiian islands. It involved H Power (Covanta), Schnitzer Steel, NOAA, Hawaii Longline Association, + 8 other partners. The Fishing for Energy program built on this on-going Honolulu program. It started on the east coast of the U.S. through National Fish and Wildlife Foundation/ NOAA where 9 programs are operating in MA, 2 in NY, 2 in RI, 1 in NJ, 1 in ME and soon one will open in VA. Two West Coast Fishing for Energy programs started in 2009 in **Oregon** with the support of the National Fish and Wildlife Foundation. Such programs depend on having access to both a SchnitzerSteel facility and a Covanta waste to energy plant who are also partners in the Fishing to Energy Program. The program accepts trawl and crab pots. Schnitzer Steel can recycle the metal as well as use their equipment to chop up the netting material into small enough pieces so they can be mixed into the household waste being accepted by the Covanta waste to energy plant without throwing the air pollution controls out of compliance. This Covanta plant is located in Brooks, Oregon near Salem and is used to handle Marion County's household waste. Since its implementation about a years ago, Newport has already collected 45 tons of old, unwanted gear and Garibaldi, OR has collected 12 tons of gear. Most of this is trawl gear and may be old gear that has been in storage in net lockers for years while some of the un-re-useable crab pots have come from derelict gear recovery project of ODFW/OR Dungeness Crab Association.

Note: Most waste to energy (and waste to fuel and waste to gas facilities) require grinding net materials into small pieces before incineration. If materials are to be ground, they might as well be separated by type, as this material is lucrative for recycling. (An extra step of washing the nets before grinding would likely be necessary). This sort of grinding and recycling system is used in Denmark and Lithuania currently.

Other future options for handling fishing gear ?

Waste to liquid fuel and waste to plasma (gas) are technologies that may have some potential for handling plastics, but are still in pilot stages. It is unknown whether they could be well utilized for fishing gear. Appendix E of the following report (pages 193-206) provides a good analysis of the various options available and their average costs and readiness: **Tackling Marine Debris in the 21st Century (2008)** from The National Research Board can be read online:

http://www.nap.edu/booksearch.php?term=Search+This+Book&isbn=0309126975&bottom_Search+This+Book.x=8&bottom_Search+This+Book.y=18