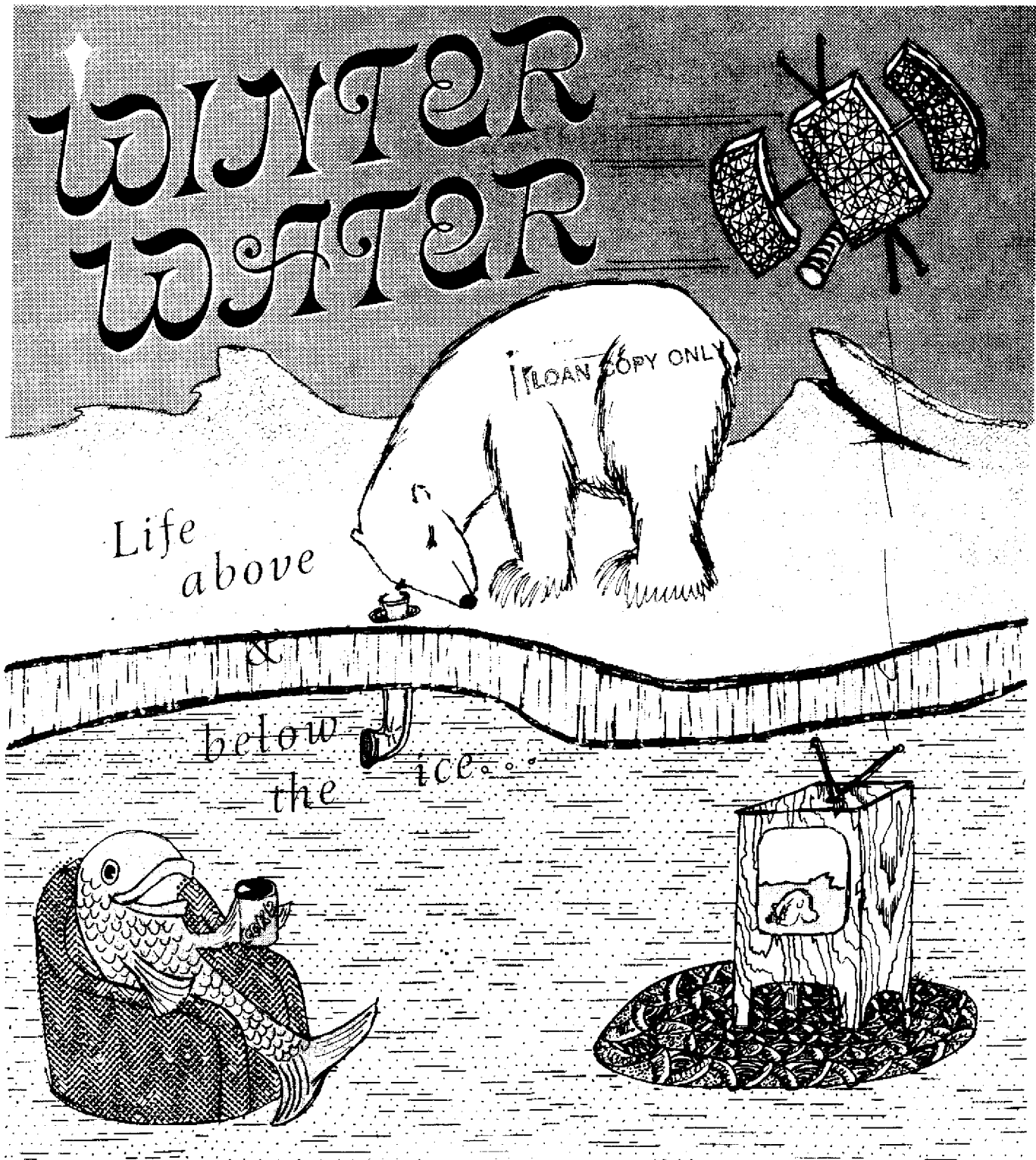


ALASKA *Tidelines*

Vol. 1, No. 4

A University of Alaska Sea Grant Publication for Alaska Schools

Dec. '78/Jan. '79



DON'T TEAR



Dear Spout,

Is the tidal bore you described in the *Tidelines* November issue (page 2) anything like a tidal-wave?

Steve Sweet
Ryan JHS, Fairbanks

Dear Steve,

That depends on what you mean by "tidal wave." What most people call a tidal wave is really a *tsunami* (tsoo-NAH-mee), which doesn't have anything to do with tides.

A tsunami is created by a sudden violent movement of the earth, like a landslide, or volcanic eruption, or earthquake. The wave that did so much damage to Alaska coastal communities after the 1964 earthquake was a tsunami.

The only *real* tidal waves are the bulges that are formed by the gravity pull of the moon and sun.

Spout

Dear Spout,

I found the October issue of *Tidelines* in error on two different points.

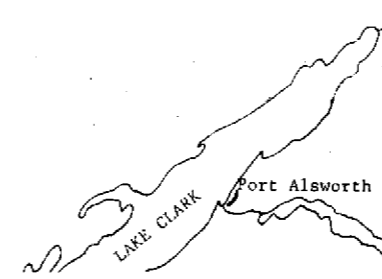
Point No. 1 was in the question about what bodies of water a boat would travel to get from Lake Clark to Bristol Bay (page 4). You can't go by water all the way because the last one-third of the Newhalen River is not navigable. It could be very harmful to

anybody who tried it, to say nothing of what could happen to the boat.

Point No. 2 is that in the map you put the town of Port Alsworth on the wrong side of the Tanalian River! This is understandable if you copied it from another map, because every map I have ever seen also has the town on the wrong side of the river.

This letter is not written to criticize, but to correct.

Scott Johnson
Port Alsworth School



Dear Scott,

Thanks very much for setting us straight, and for sending the map that locates Port Alsworth in the proper place for once and for all!

We'll plan to start all future fishing trips to Bristol Bay from the Iliamna Lake side. But maybe it's just as well the Newhalen River isn't navigable. If boats can't make it down, monsters shouldn't be able to make it up.

Tidelines hates to be wrong, but we certainly welcome letters putting things right. We feel we're very lucky having readers who really know their corner of this big state better than anyone else.

Spout

Thanks and a spurt from the Spout to a reader in Wasilla who didn't sign his/her (?) name, but sent in the following question: "What do fish do

when they get caught under the ice? Do they just lie there and suffocate?" Well, the fish on our cover looks pretty relaxed. But to find out more, see the story inside.

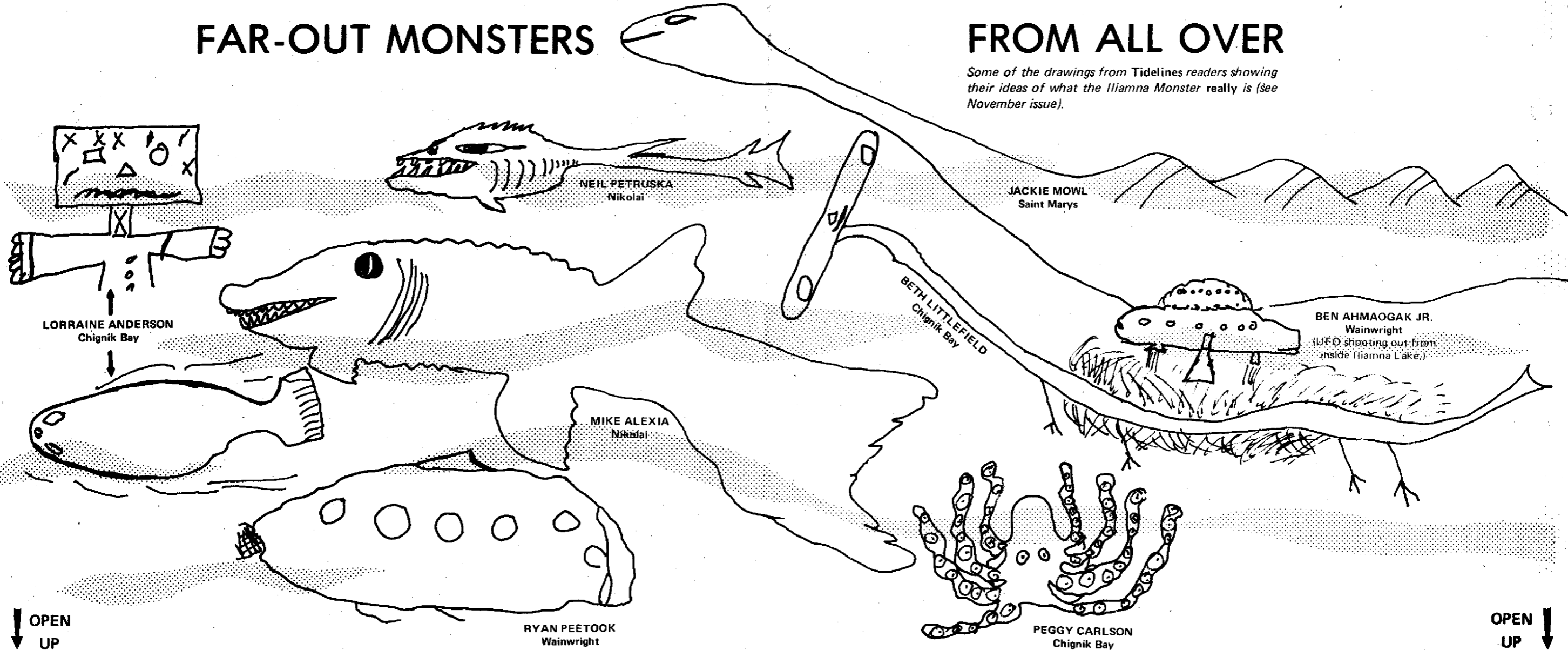
Spout

This month's Alaska Tidelines is a combination of the December and January issues due to (1) holiday mailing schedules, (2) a circulation crunch (we are now printing 20,000 copies - more than we ever expected), and (3) to give the staff a chance to catch its breath. Best wishes for a happy New Year to all our readers, with deep thanks for the support and response you have given this publication. We'll see you in February, when we'll be looking for "Alaska's Hide-and-Seek Shrimp."

FAR-OUT MONSTERS

FROM ALL OVER

Some of the drawings from *Tidelines* readers showing their ideas of what the Iliamna Monster really is (see November issue).



OPEN
UP

OPEN
UP



(ADF&G Photo)

Time: Christmas eve, 1978.

Place: On the shorefast ice of the Arctic Coast, about 20 miles north of the village of Nuiqsut.

Scene: It is still and bitter cold. The ice gleams faintly under the northern lights and stars seem close enough to touch with your finger. The only motion — and you would have to look very carefully to see it — is a tiny wisp of steam rising from a small opening in a snowbank.

About three feet beneath the surface of the snow the mother polar bear cradles her two newborn cubs against her breast with her huge paws. She licks them dry and breathes against them to give them warmth. When full-grown, the cubs will be among the largest meat-eating animals on earth. But now they are unbelievably small — no bigger than a pound of butter. Pale, blind, and almost hairless, they cling to their mother with tiny sharp claws.

Two months earlier, after the first blizzards of the season, the mother bear had burrowed into a hollow under an ice ridge where the snow would drift over her. As her body warmth melted the snow into ice, she had expanded the den into a good-sized chamber, clawed out a small air vent in the ceiling, and settled down to await the arrival of her twins.

Now it will be three more months before the cubs know anything but their home under the snow. Fed by their mother's rich milk, they will grow thick white fur, cut their teeth, and learn to walk and to romp with each other. Gradually the den will become bigger to make room for all the action.

Far away, the father polar bear follows the southern edge of the ice in search of his favorite food, the ringed seal. His winter range in Alaska is as far south as the Bering Strait, sometimes even to St. Lawrence or St. Matthew Islands in the Bering Sea. But he travels and hunts alone, and will not den except for taking temporary shelter in a shallow snow pit during the worst storms.

The polar bear, whose scientific Latin name is *Ursus* (bear) *maritimus* (of the sea), is huge, strong and tireless. Male polar bears may be 12 feet long and weigh up to 1,400 pounds. But despite their great size, they can run at speeds of 20 to 25 miles-an-hour. They have been known to swim distances of 15 to 20

miles between ice floes or islands and the mainland in search of food.

SPRING

In late March or early April, the mother and cubs break out of their den. The cubs, which weigh about 15 pounds by now, need time to get used to the great outdoors. For the first few days, the family will make only short trips from the open den.

But the mother is very hungry. She has been living off her body fat all winter and has had nothing to eat but snow from the walls of the den. Soon she sniffs out a ringed seal pupping den in the ice. She scratches off the snow, pounces with all her weight to break through the ice cover, and snatches out the baby seal underneath.

Slowly the bear cubs learn the ways of survival — to stalk the seal, to swim, and to make their way on the drifting ice. But they will stay with their mother until they are about 28 months old and the mother mates again.

SUMMER

As the pack ice pulls away from the coast, home for the polar bear becomes the vast floating ice cap of the polar basin. There are no international boundaries here. Instead, the area is like a great frozen backyard to the five circumpolar nations: the United States, Canada, Denmark (Greenland), Norway (Spitsbergen), and the U.S.S.R. (Russia and Siberia).

In 1973 these nations drew up an agreement which has the effect of creating a high seas polar bear refuge. This agreement bans the use of aircraft or large motorized vessels in hunting polar bears, and allows bears to be taken only in areas where they have been hunted in the past by traditional methods. It also calls upon individual nations to protect denning and feeding areas along their borders, and to share scientific data (information) and research on the bears far-flung migration routes.

Most of Alaska's research has been directed by state game biologist Jack W. Lentfer, now considered one of the world's leading authorities on polar bears. Working out of Barrow, he was involved in the capture, tagging and study of more than 1,000 bears. He also helped design and test complicated transmitters which make it possible to track bears by satellite.

Lentfer believes Alaska's present polar bear population is in good shape. The five polar bear nations all have active research and management programs, and over-hunting is not a threat. But he told *Tidelines* that what worries scientists most about the future of the bears is the possible effect of oil and gas development in the Arctic.

While the most popular polar bear denning areas are on the large offshore islands of Canada and Siberia, there is a limited amount of denning on Alaska's eastern Arctic coast (*see map*). And unfortunately, that is right in the middle of the Prudhoe Bay industrial operations and the rich oil reserves believed to lie along the Beaufort Sea Outer Continental Shelf.

Lentfer and other scientists fear that human activity will keep bears away from these denning sites or drive them out before their cubs are ready. After much research on the problem he has recommended, among other things, that:

- Activity along the coast be reduced in late October and early November when bears are coming ashore to den.
- Use of explosives be limited to certain times of year.
- "No activity" zones be established around known polar bear dens.

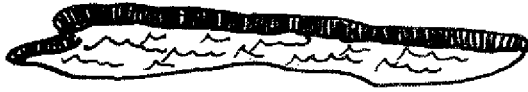
FALL

The pack ice grinds against the shore again. The mother returns with her two big cubs, now four feet long and round with a heavy layer of fat that will see them through until spring. Their old den has drifted away during the summer. But the mother carefully selects a new site where the snow will drift over them, and the three curl up to begin their long winter's nap.

READ ON:

- "Polar Bear Reproductive Biology and Denning (Final Report)," by Jack W. Lentfer. Alaska Department of Fish and Game. 1976.
- "The Year of the Polar Bear," by Thomas J. Koch. The Bobbs-Merrill Co., Inc. 1975.

Life above...



and below the Ice

Time: Christmas eve, 1978.

Place: Crosswind Lake, about 25 miles northwest of Glennallen in the Copper River Basin.

Scene: All that can be seen is blowing snow sweeping across the surface of the frozen lake. But beneath the ice in the murky weeds, dark eel-like fish mill together — and new life begins.

If you've been wondering how fish can survive when Alaska's waters are locked in the winter's deep-freeze, consider the burbot. It not only lives, but it is one of the few freshwater fish that spawns in midwinter under the ice.

The burbot, also known as the lush or ling, is a strange looking creature. It has a long smooth olive-black body splotted with yellow, rows of sharp teeth, and a little "chin whisker" called a *barbel* hanging from its lower lip. Even its scientific name, *Lota lota*, isn't very complimentary. It comes from the French word *lotte*, which in English means to "pout" or sulk.

Surprised ice fishermen, who have hauled up the burbot instead of the silvery trout they were expecting, might insist that the dark depths of the lake is the only place even burbot can stand the sight of each other. But if the fishermen took it home to fry or boil, they would find its flesh white, firm, flakey and delicious.

The burbot, a freshwater cousin of the cod, thrives in the deep cold waters of lakes throughout northern Alaska (see locator map right). But what about fish that live in shallower lakes or rivers which might freeze solid? What do they do and how can they survive?

Those were the questions *Tidelines* asked Dr. Ronald L. Smith, associate professor of biology and zoology at the University of Alaska, who has made a study of the effects of ice on Alaska fisheries.

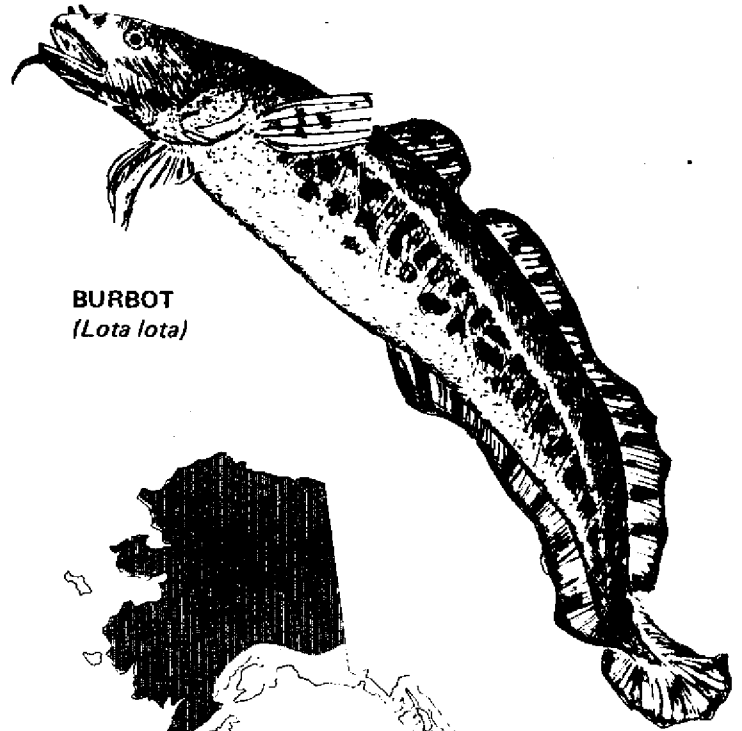
"The important thing is whether or not the body of water freezes completely," he said. "Fish can survive if the lake or river is deep enough so that the volume of water can provide enough oxygen, or if there is a steady flow of water with oxygen into it.

"Most of Alaska's big rivers and a few of its Interior streams have deep holes that remain unfrozen. The Yukon, for example, doesn't freeze completely except in a few isolated rapids or shallows where the water isn't very deep.

"When the ice begins to form in late fall, many fish move from the shallow waters into the deeper waters. Arctic grayling, whitefish, Northern pike and Alaska blackfish are some examples. Then they migrate back after break-up. You'll find Northern pike near the village of Napakiak on the Kuskokwim in the winter where they'll never be in the summer."

What about fish in the smaller lakes?

"If fish are stuck and can't get out, a number of things might



BURBOT
(*Lota lota*)



Range in Alaska

Courtesy
ADF&G

happen," he said. "First, of course, they can die for lack of oxygen or their bodies will freeze.

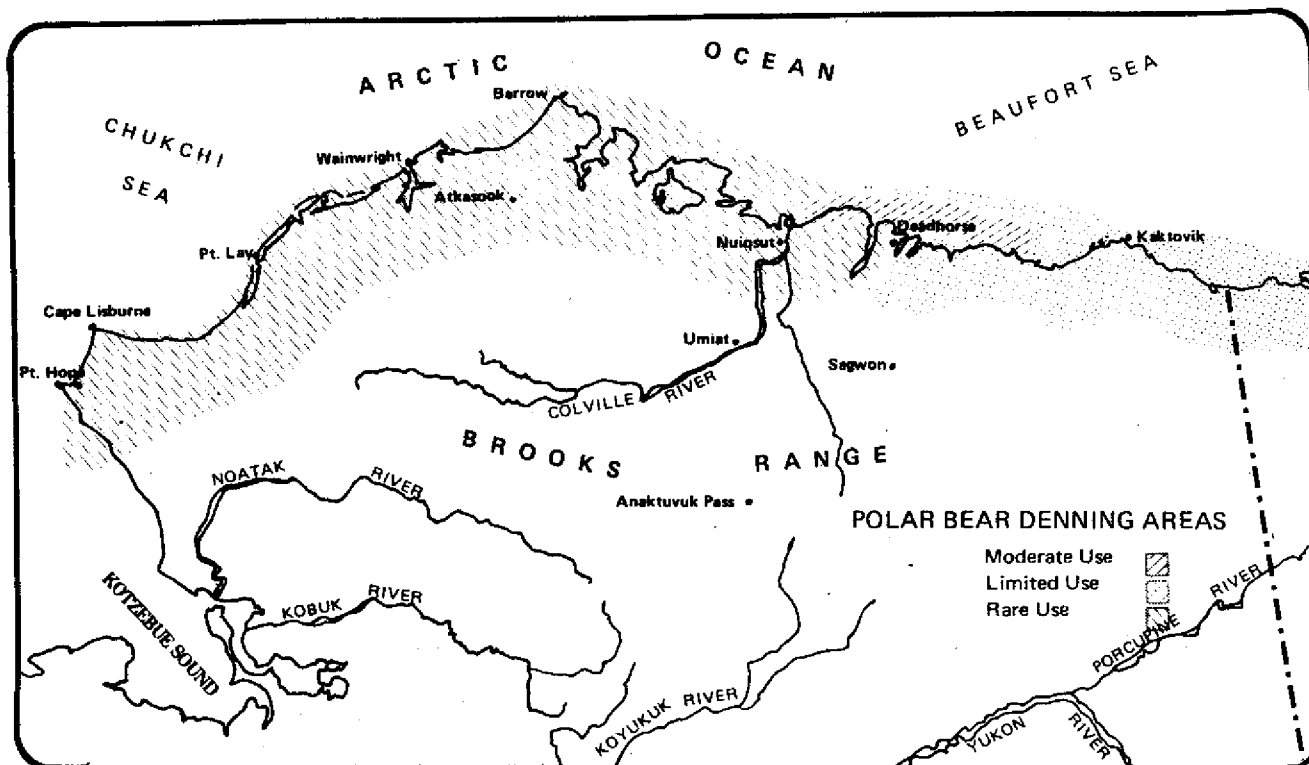
"But fishes' body fluids have a lower freezing point than fresh water, and they can survive if the water doesn't fall below about 30 degrees Fahrenheit. Fish have been known to live in a state of suspended animation if ice forms *around* them. There have even been reports of Alaska blackfish freezing solid and then coming back to life after thawing out, but this has never been proven.

"However, blackfish can be active at very low temperatures. They are equipped with a lung-like structure and are believed to be able to gulp air from pockets under the ice. Other fish have also been known to gather around muskrat "pushups," or holes chopped in the ice where oxygen is absorbed into the water."

What do fish do in the winter? Do they go into a kind of hibernation like some animals do?

"Many species don't feed very much," he said, "and are very inactive. You might say they 'do little'."

Except, of course, the homely burbot.



Adapted from "Alaska Regional Profiles: Arctic Region," AEIDC, University of Alaska. Source: Alaska Department of Fish and Game

Hunting On the Sea Ice

The Eskimos of Alaska still hunt the polar bear for food as they have for centuries. But under a new federal law designed to protect the polar bear, hunting by all other people is banned. There is no limit to the number, size, sex or age of the polar bears Eskimo hunters may take as long as there is no waste. Meat and by-products, such as the highly prized polar bear skin, may be sold only to other Native people.

Although guns have replaced the ancient spear as a weapon, the great white bear is still a clever and fearsome opponent. And hunting the sea ice still requires much skill and courage. Here Vincent Nageak tells of some of his experiences in a story adapted and reprinted by permission of the author and of the Barrow School Inupiat Program.

When you are climbing on the pressure ridges to scan the sea ice, it is good to check if the ice you will step on is solid. Some have had accidents on pressure ridges when they're not careful, including myself.

At one time I ended up almost in slush ice. There were pieces of iceberg around, but they were small and not safe, and the land-locked ice was quite a distance away. So I stayed on this iceberg — just sat and floated there. I was helpless in the middle of a lead. I'm telling you all this so you will know how to avoid it.

Finally a crust of thin ice formed between the pieces of ice, and I decided to go across on them. By that time it was nearly midnight. I was cold and shivering. The ice I would cross over was okay, but the pieces were small. I stirred around for awhile, strapped my gun over my shoulders, and ran through these pieces of broken

ice. I made it across and headed north. I know I've said before that you shouldn't head north at such a time unless there is a way out. This time the north side was the only way out.

After all this happened, I sighted three polar bears. There were other men hunting close by, and these bears were going in the opposite direction, kind of hiding from the men. I hid myself and watched the bears because they were coming toward me. Finally the bears passed the other hunters and were very close to me.

My uncle, Anutuqsan, always told me when you see a bear running to stand up all of a sudden from hiding. It will stop right away, so suddenly that it will even slide a ways. So now I stood up. The bears looked at me and didn't know what to do.

The young ones were bigger than the mother bear. I shot the mother bear in the heart and she just fell

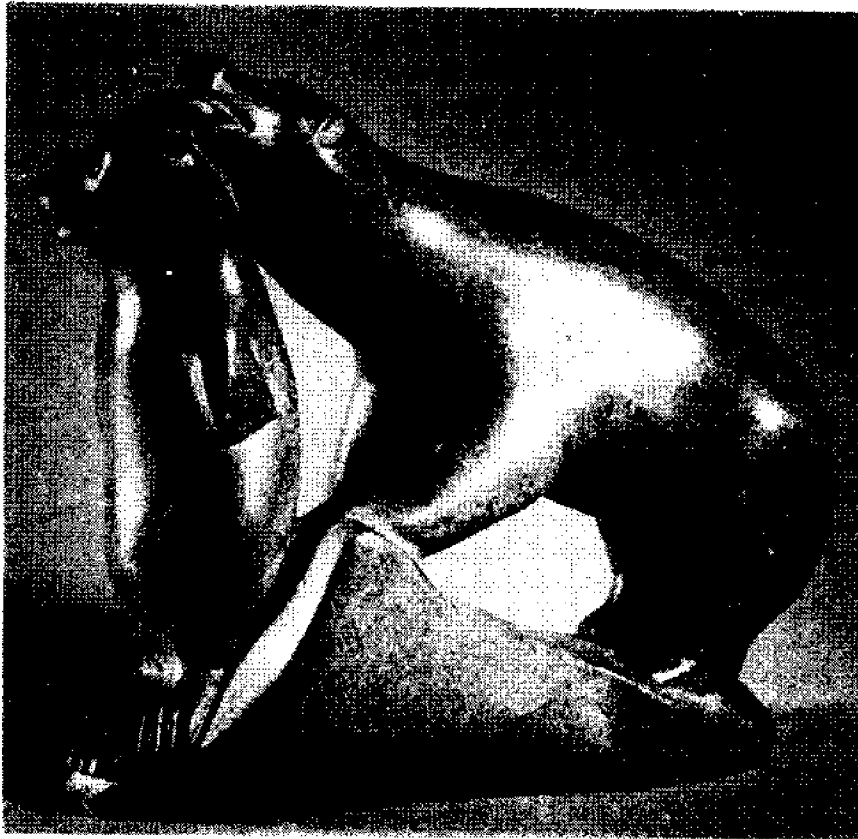
forward. Then I shot the other two, also in the heart. Then I shot three times to signal the other hunters to come over and get a share. That's the way I usually do. The hunters started arriving and my! the bears were fat. Ilavgaq remarked, "You didn't catch any bears. I saw them first." And we all laughed . . .

A bear should not be shot at while it is far away. When you are hiding, you cannot move around or you will scare it away. Sometimes when I am hiding I sit down and make walking noises with my feet on the snow, and let them get close to me that way.

One time I sighted this certain bear that was walking along, listening at times. I sat down behind a low pressure ridge and made the walking noises. The bear lowered himself as if he'd heard an animal and started toward me. He kept coming up along the pressure ridge. I could even hear how he would hold his breath and then breathe a deep one.

Finally he got close enough, like from here to that chair over there. It was a big bear. My gun was ready. When he turned to my direction, he saw my face. He started to open his mouth and was going to straighten up when I shot him in the heart.

I've told you now about hunting. When we start to run out of food at home, my father used to pray to God so there would be something for me to catch and take home. So I would catch animals in answer to his prayers. That kind of prayer is strong. Even nowadays it can be even stronger.



animals in answer to his prayers. That kind of prayer is strong. Even nowadays it can be even stronger.

The federal law that applies to polar bears is the Marine Mammal Protection Act of 1972. However, Alaska is now trying to have management of its polar bear resource returned to the state.

Alaska has proposed a plan, now under review, that would ban the killing of mother polar bears and their young. It would also allow a limited amount of recreational hunting by persons other than Eskimos. The state suggests that such hunts be based at Arctic coastal villages and be guided by Eskimos, which would provide an additional source of income for the area.

Which program do you think is better: the federal law as it now stands (reread the introduction at the beginning of this article) or the plan proposed by the State of Alaska? Why?

CAREER CORNER:

Meet the Ice Man

SEA ADVISORY FOR WESTERN ALASKA AND ARCTIC COASTAL WATERS . . .

NEXT 48 HOURS . . . GRADUAL NARROWING OF SHORE LEAD FROM CAPE LISBURNE TO POINT BARROW. NEW ICE FORMING IN LEAD. CONTINUED GROWTH OF EXISTING ICE AND FORMATION OF NEW ICE NEAR SHORE IN AREAS 11. EDGE OF MAIN ICE PACK DRIFTING SOUTHWARD . . .

That was the message that chattered out over the Weather Service wires early in November for relay to stations along the Arctic rim and the Bering Sea. Freeze-up was coming and the great polar ice pack was closing in.

Shipping and barge traffic had long since left the Beaufort Sea. Now the ice was slowly sealing off the coast from Point Barrow westward. Soon it would move down through the Chukchi Sea, forming a wintry ice bridge of sorts across the Bering Strait. Then it would arc out into a great frozen semi-circle over the northern shallows of the Bering Sea itself.

At the National Weather Service office in Fairbanks, Bruce Webster carefully follows the day-to-day

movement of the ice. As Alaska's first official "ice specialist," his job is to figure out where the ice will go next and what kind of ice it will be. His advisories are of vital importance to coastal residents, marine shipping, and

even the Bering Sea crab fishermen who could lose thousands of dollars worth of pots in one swift surge of sea ice.

Although marine ice forecasting is a



(UA Photo by Sabra McCracken)

ICE MAN . . .

(Continued)

well developed science in the Scandinavian countries and other parts of the world, it is fairly new to Alaska.

"Alaska started looking around for an ice specialist in 1975 when the supply runs for the Prudhoe Bay oil fields got held up because the ice didn't move out when it was supposed to," Bruce told *Tidelines*. "Usually the fleet of supply barges leaves Seattle in July and then waits at Icy Cape or Wainwright until the ice moves away from the coast. But that year it didn't open up until late September."

Bruce was working at the weather station in New Orleans at the time, but he had spent a year in the weather station at the South Pole right after he got out of college. "Even though the South Pole is several hundred miles from the coast and 10,000 feet above sea level, somebody must have decided

I knew something about ice," he laughed.

While Bruce has had to learn about ice forecasting pretty much from scratch, there was lots of scientific hardware to help him. Now he studies satellite photos taken from hundreds of miles aloft. He compares these with charts drawn from aerial observations, aided by a new gimmick called SLAR (Side-Looking Airborne Radar) which can "see" right through a cloud cover. He also checks reports from human observers on ships or shore when they are available.

All of this tells him where the ice is at the moment. But to figure out what it will do next, he relies on his fellow meteorologists for forecasts on wind and weather patterns throughout the area. "The ice reacts to wind and air temperatures, just as it does to sea currents and water temperatures," he explained.

How did he get interested in

weather work? "I was 12 years old in 1960 when hurricane Donna — one of the worst on record — swept through my home state of Florida. I was fascinated by the destructive forces of nature, and I decided to be a hurricane forecaster." He went to Florida State University and studied meteorology (the science that deals with the atmosphere). After that, it was on to the South Pole and then, eventually, Alaska.

With winter coming on fast, *Tidelines* couldn't help but ask how cold it got at the South Pole.

"Minus 101 degrees was the coldest recorded at our station," Bruce replied. "And the coldest ever recorded in the world was 126.9 degrees below zero at the Soviet Station in Antarctica."

Just talk of temperatures like that is enough to make an "ice man" out of anybody.

Over and Under

Starred (*) words are based on information in this issue.

ACROSS

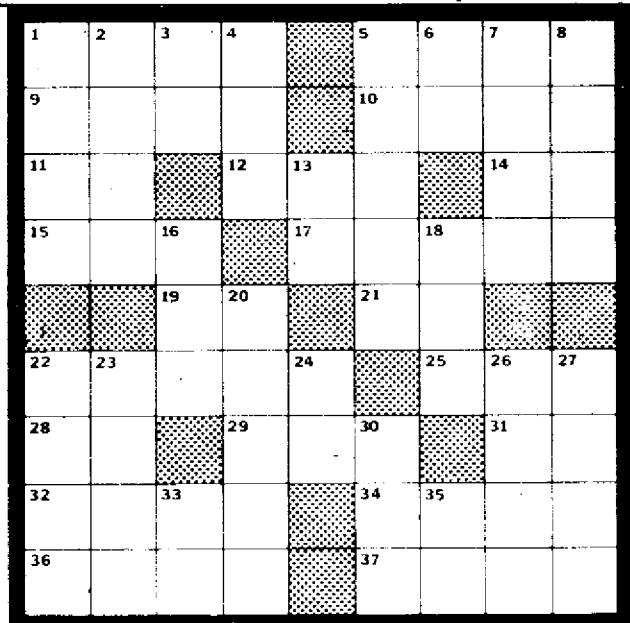
- *1. Polar bears' favorite food is the ringed ____.
- *5. Winter home for polar bear mothers and cubs.
- *9. Female polar bears make their dens ____ in the fall of the year.
- 10. Now that basketball season is here, everyone should ____ for the school team.
- 11. Adverb meaning "like."
- *12. "Life Above and Below the ____" (spelled backwards).
- 14. Opposite of "yes."
- 15. Routes (abbr.).
- *17. Polar bear mothers and cubs ____ through most of the winter.
- 19. Exclamation of surprise.
- 21. Letters of the alphabet between K and N.
- *22. Latin word for "bear."
- 25. Eskimo cutting tool with a curved blade and big handle.
- 28. Southeast (abbr.).
- 29. Short for "moccasin."
- 31. On Schedule (init.).
- *32. Scientific information is also called ____.
- 34. Plural of a kind of cereal used in making ____ meal cookies.
- 36. Hawkeye, TV star of

M*A*S*H, is played by ____ Alda.

- *37. Salutation used in letters, as in "____ Spout."

DOWN

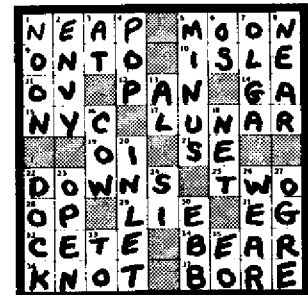
- *1. A new kind of radar, used in tracking ice movement, that can see through clouds (init.).
- *2. The most popular denning area for Alaska's polar bear population is along the ____ Arctic Coast.
- 3. Preposition meaning "beside" or "near."
- 4. Civil War General Robert E. ____.
- *5. Game biologists fear that oil ____ ing operations in the Beaufort Sea might disturb denning polar bears.
- 6. Equal Opportunity (init.).
- 7. Not any.
- *8. One of the results of the Marine Mammal Protection Act of 1972 was to ____ polar bear hunting by all except Native people.
- 13. Chief of Staff (init.).
- 16. International call for help (3 dots and 3 dashes).
- 18. A tall, flightless bird, rather like an ostrich.
- *20. It has been recommended that ____ activity around denning areas be limited to



certain times of the year.

- 22. U.S. Department of Agriculture (init.).
- 23. Opposite of "fake."
- 24. South (abbr.).
- *26. Scientific name for the burbot.
- *27. One of the circumpolar nations which signed the polar bear protection agreement (init.).
- *30. The burbot is a freshwater cousin of the ____.
- 33. Target Area (init.).
- 34. Aeronautical Engineer (init).

Answers in February issue.



November X-Word Answers

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Editor, Virginia Sims; Managing Editor, Fran Sweet; Artists, Ann C. Schell and Tricia Olsen; Advisor, Dr. Richard S. Lee. Address all communications to: **Alaska Tidelines**, Communications Office, Alaska Sea Grant Program, University of Alaska, Fairbanks, AK 99701. The University of Alaska provides equal educational and employment opportunities. © Copyright 1978.