



# SCIENCE BYTES

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## **Rock and Roe Edutainment** *presented by Fritz Kraus* **Salmon Education Programs**

To schedule: Please send your approved ASD Community Resources Request Form to Marva Stevens at Community Resources. For more information contact Marva at 742-4147.

Rock and Roe Edutainment is excited to present a series of classroom presentations related to Pacific salmon and watersheds. These activities are designed to complement the Alaska Department of Fish and Game's "Salmonids in the Classroom" Program, but can also be used by instructors not participating in that program, who may be incorporating salmon or watersheds into their curriculum. Students will gain a better understanding and appreciation of Alaska's most important natural resource, salmon, and learn about the importance of maintaining healthy watersheds.

Should a guy named "Fishman" educate my students?! Absolutely! Fritz, who is a retired fisheries biologist, developed, implemented and coordinated the

Alaska Department of Fish and Game's "Salmonids in the Classroom Program" for 15 years in locations statewide. He developed, and updated the presentations listed and has worked with thousands of students at all grade levels.

## **The Salmon Life Cycle (Grades K-12; 1.25 hours)**

Students will name the five species of Pacific salmon found in Alaska and follow the life of the Pacific salmon from egg through spawner, with the help of a Powerpoint presentation and egg stage vial displays. Students will gain a better understanding and appreciation of salmon habitats and how difficult it is for a salmon to survive. Students will stamp out the salmon life stages on a handout describing the life cycle. Students will also put their life cycle knowledge to use when they learn how salmon are aged using seasonal fresh and marine stage growth patterns found on their scales.

## **Design-a-Fish (Grades K-12; 1.0 hour w/ additional class time following)**

Fish have been around for millions of years and have developed anatomical adaptations for living in their home environment and differing habitats. This Powerpoint presentation will discuss these basic adaptations by looking at body, mouth and tail shapes as well as coloration patterns and reproductive strategies that have helped fish survive successfully in their habitats. Students will then receive five cards depicting the different characteristics described and they will draw or "design" their own fish. Students will then finish the project in-class or at home by writing a story about their new fish.

## **Fly Tying (Grades 2-12; time varies depending on grade 1.5-2.5 hours)**

Now that students know all about salmon, it's time to learn how to enjoy the resource! Each student will tie their own actual fishing flies, which can be used to catch their own fish. Fly tying is about creating patterns that imitate something happening in or around a stream, which salmon, trout, char or grayling like to eat at a certain time of the year. Students will tie the four salmon egg stage patterns imitating the egg, eyed egg, alevin and fry. It's not as hard as you think! Lots of parent help is required.

## **Commercial Fishing Boats (Grades 2-12; 1.0 hour)**

Commercial fishing in Alaska is a major industry, which supplies fresh, frozen and canned product to destinations around the world. These fisheries also serve as an important management tool to insure that Alaska's most valuable renewable aquatic resources will be around for future generations. This Powerpoint presentation introduces students to the various boats and methods used to

catch salmon as well as other species of fish. This Powerpoint presentation features the superb artwork of Pedro Denton from his book "Boats of Alaska".

#### **Watersheds 101 – Classroom (Grades 4-12; 1.5 hours)**

Rivers and streams are an important indicator of the health of a watershed. Salmon, as well as humans need a healthy watershed to survive. The students will learn about the water cycle, what a watershed is, how streams change as they progress through a watershed, stream types, riparian zones, healthy stream requirements, watershed impacts and stream inhabitants – including the fish and macroinvertebrates (aquatic insects), which are the aquatic indicators of stream health.

#### **Watersheds 101 – Field (Grades 4-12; 2.0 - 4.0 hours)**

Take what you've learned about watersheds in the classroom into the field and do a stream investigation! Streamside discussions will focus on two sites along Campbell Creek and its watershed. Students will determine if the stream is healthy or possibly impaired by sampling water quality and the aquatic macroinvertebrates found at one or both sites. They will also discover if there are juvenile salmonids or other resident fish living there. Students will discuss what, if anything, could be impacting the stream. A "scavenger hunt" is also included with this activity so that students can become more aware of their natural surroundings in and around Far North Bicentennial Park and Campbell Creek Park. One or both sites may be visited depending on class time restrictions.

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#### **FLINN Scientific Activities - Mass vs Density & Culturing Amoeba**

Engage your students from the very start! Your first free science activities of the new school year are here! As a "Thank You!" for your business, you will receive two science activities every month by e-mail from Flinn Scientific.

It's always a thrill to see students' faces light up when they comprehend a science concept. That's one reason why you love teaching . . . and it's why Flinn Scientific provides free lab ideas and why we strive to make your job easier. Flinn guarantees superior service, fast delivery, and quality products at low prices. Your passion is teaching and we want to help you succeed. We would be honored to receive your science supply orders during this new school year and we thank you for being a Flinn Customer!

The first life science activity "Culturing Amoeba" provides tips and suggestions on how to maintain a healthy supply of these intriguing protozoa. Once your students have gained experience using the microscope,

observing the locomotion of Amoeba is a classic life science experience.

"Mass vs. Density" is a favorite physical science activity for initiating questions and discussion. Why does an object float in one liquid, but sink in another? The answer provides an introduction to understanding the relative densities of solids and liquids.

To print "Culturing Amoeba" and "Mass vs. Density" please go to:  
[http://www.flinnsci.com/Sections/MS/Activities/MS\\_act.asp](http://www.flinnsci.com/Sections/MS/Activities/MS_act.asp)

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#### **New Education Materials from NASA**

The Educational Materials section of NASA's Web site offers classroom activities, educator guides, posters and other types of resources that are available for use in the classroom. Materials are listed by type, grade level and subject. The following items are now available for downloading. (These are three of many).

#### **Getting Dirty on Mars -- Grades 5-12**

The Mars Phoenix lander is digging through the soil of the Red Planet and collecting samples. In this activity, students will:

- Work in cooperative groups to collect soil samples from the field, just as NASA's robotic Phoenix Mars Mission collects samples on the Red Planet.

- Understand the properties of soils.

- Examine soils for their ability to sustain organisms.

Students will measure the soil moisture content, compare soil colors, look for biomarkers and measure pH to make their comparisons. They will then present a "Soil Properties Report."

[http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Getting\\_Dirty\\_on\\_Mars.html](http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Getting_Dirty_on_Mars.html)

#### **Exploring Space Through Algebra -- Grades 7-12**

Algebra is an essential component of contemporary mathematics and its application in many fields. Exploring Space through Algebra will help students develop a deeper understanding of key algebraic concepts, and they will learn how to apply those concepts in the context of space exploration. This project can be a valuable supplemental component to the Algebra I and II and geometry curriculum as it exposes students to the limitless options in science, technology, engineering and mathematics fields.

The focus of Exploring Space Through Algebra publications is to promote inquiry through real-world ap-

plications. Doing so places students in the role of NASA scientists, engineers and researchers. This placement promotes cooperative learning by exposing students to more problem-solving ideas and demonstrates how NASA scientists, engineers and researchers work in teams to accomplish tasks.

[http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Exploring\\_Space\\_Through\\_Algebra\\_Orion.html](http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Exploring_Space_Through_Algebra_Orion.html)

### **NASA Sponsored Resource - Science / Social Studies**

As you start the new academic year, you may be looking for resources to assist in the science and social studies curriculum realms. See the link below for some new ideas...

<http://www.earthadventure.org/>

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### **NASA Announces Competitive Grant Programs**

NASA's Office of Education has announced three new extramural funding opportunities that could result in the award of grants or cooperative agreements. One of the three funding opportunities is the K-12 Competitive Grants Opportunity, a competitive education grant program targeting secondary school level teaching and learning, with grants being awarded to U.S. public schools and non-profit organizations. The goal of the opportunity is to seek out and support new, innovative, and replicable approaches to improving science, technology, engineering, and mathematics (STEM) learning and instruction. This will leverage NASA's unique contributions to STEM fields.

The second area is the Global Climate Change Education Opportunity. The goal of this competitive project is to improve the quality of global climate change and Earth system science education at the elementary, secondary, and undergraduate levels. Each funded proposal is expected to take advantage of NASA's unique contributions in climate science to enhance students' academic experiences and improve educators' abilities to engage and stimulate their students. In the third area of opportunity, NASA is making available funding for a competitive program for science museums, science-technology centers and planetariums to enhance programs related to space exploration, aeronautics, space science, Earth science or microgravity. The Office of Education has contracted the external peer reviewer proposal evaluation process to NASA's Jet Propulsion Laboratory in Pasadena, Calif. Authority for final award selections rests with NASA Headquarters. For more detailed information about the 2008 Competitive Grant Programs, click here <http://nspires.nasaprs.com/external>

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### **Space Explorers, Inc. Planetary Times**

Welcome to the latest issue of Space Explorers, Inc., Planetary Times. Here you will find current Earth and space science news stories and professional development opportunities.

To view a graphic version of this newsletter, point your browser to:

<http://news.space-explorers.com/?v=6=8>

<<http://news.space-explorers.com/?v=6&i=8>>

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### **FLINN Scientific - Free Chemistry Demonstrations**

Two free ChemFax! are now available from Flinn Scientific's exclusive series of fun and exciting demonstrations and experiments.

ChemFax! activities are guaranteed to capture the attention of your chemistry students while teaching valuable and sometimes difficult-to-learn concepts that are relevant to National Science Education Standards.

Two ChemFax! demonstrations are now available: **The Disappearing Aluminum Can** — It's a powerful teaching strategy . . . using everyday objects, like a common beverage can, to reveal the countless ways that chemistry improves our lives. This chemistry lab idea from Flinn Scientific, entitled "The Disappearing Aluminum Can" helps students understand oxidation and reduction, metal alloys, and inert compounds.

**Phosphorescent Flash Paint** — Teach Phosphorescence in a flash! Students always enjoy creating shadowy images on glowing flash screens. Making the paint used to be messy and time consuming. Not any more! Learn how to make a flash screen with the brightest glow possible, without the mess and mixing, and no left over paint ingredients.

**ChemFax! are free to teachers only.** To access your copies please go to

<http://www.flinnsci.com/chemfaxpr2009.asp>

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### **Flinn Scientific - FREE Laboratory Safety Training**

Flinn Scientific offers free laboratory safety-training by e-mail called "Flinn Scientific Science Department Safety Training." This free service provides an informative 6- to 8-minute safety training lesson to science teachers every month. The training can be included in your monthly department meeting or presented as a short safety meeting.

Every month you will receive an e-mail with a link to the latest edition of Flinn Scientific Science Department Safety Training. The safety notes include both a reproducible handout and a presenter's information guide.

Very little preparation is required to conduct the safety meeting.

To receive your FREE Science Department Safety Training, simply e-mail your request along with your name, school name and address, and the subjects and grade levels that you teach to Flinn Scientific at [flinn@flinnsci.com](mailto:flinn@flinnsci.com).

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### Science Grants Available

#### October 1

#### Siemens Competition in Math, Science & Technology

Provides scholarships for high school students to undertake individual or team research projects in science, mathematics, engineering and technology or in combinations of these disciplines.

Scholarships for winning projects range from \$1,000 for regional finalists to \$100,000 for national winners.

<http://www.collegeboard.com/siemens/>

#### October 31

#### Project Learning Tree GreenWorks! Grants

For Project Learning Tree teachers and students. Requirements:

1) Applicant must have received training in PLT. 2) Youth must implement the project. 3) The project must integrate student learning and community service. 4) The project must include at least one community partner, such as a local organization or business. 5) The project must acquire 50% matching funds. Grants of \$250 to \$1,000 each

[http://www.plt.org/cms/pages/21\\_22\\_21.html](http://www.plt.org/cms/pages/21_22_21.html)

#### November 15

#### Texas Instruments Graphing Calculators Reduced Price Program

Special pricing on reconditioned TI-83 Plus graphing calculators for any grade 6-16 school or school district (with exceptions) provided at least 50% of the students to be served are minority and/or economically disadvantaged.

Special pricing on reconditioned calculators, batteries, manuals and unit-to-unit link cables for classroom use only, sold in teacher packages of 10.

[http://www.maa.org/summa/archive/newti\\_letter.html](http://www.maa.org/summa/archive/newti_letter.html)

*These are just 3 of 12 Science Grants that are out there - just waiting to be "plucked" by an ambitious teacher and students. If you would like the rest of this list - please email your request back to meat my ASD email: [onslow\\_judy@asdk12.org](mailto:onslow_judy@asdk12.org).*

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### Nat'l Institutes of Health- Curriculum Supplements

A series of curriculum supplements from the National Institutes of Health aimed at promoting science education achievement is now aligned to individual state education standards in science, math, health and English language arts for grades K-12. This cross-curricular alignment, unique to each state, shows educators how the NIH curriculum supplements will help them meet specific learning goals for students and spells out the usefulness of the series nationwide. This series is free to educators upon request.

The ongoing series promotes inquiry-based, interdisciplinary learning. The series currently includes 16 supplements on such topics as genetics, infectious diseases and cell biology. The supplements -- consistent with the National Science Education Standards -- combine cutting-edge science research discoveries and real scientific data from NIH with state of the art instructional materials for grades K-12. The National Institutes of Health is a component of the U.S. Department of Health and Human Services.

To request free supplements or learn about how they are aligned with individual state standards, visit the NIH Office of Science Education Web site at <http://science.education.nih.gov/supplements>.

If you have any questions about these materials, please e-mail [ose@science.education.nih.gov](mailto:ose@science.education.nih.gov).

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### Balloons for ASD Latex Reduced Environment

Latex Balloons making you Sick? Non Latex Balloons REUSABLE non-latex type balloons. Vinyl, Mylar, PVC, Plastic Balloons. Great for science experiments, crafts and hobbies, party decorating. (866) 51-BLOONS

<http://www.mrballoon.com/>

This site has a tips page for non latex balloons also.

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### Alaska Grown "Eat Local" Challenge

Hello educators:

Our friends at Alaska Division of Agriculture are promoting Alaska Grown with a special "Eat Local" challenge, Aug. 24-30. This is a great chance to share the benefits of eating local foods with your classes. Not only does it mean you are getting the freshest ("Fresher By Far") food around, you are also eating greener because the food didn't require hundreds of gallons of fuel to reach Alaska. And, it helps support Alaska's agricultural industry, which is vital to our state's security.

And did I mention the nutritional benefits of eating food that's fresh?

There are some completed Alaska Grown lesson plans by Alaska teachers just posted on the Alaska Ag in the Classroom website. These are designed for lower grades but adaptable.

I have a lesson plan on eating local in the works, but it is still a bit rough. It's adaptable for mid elementary and up if you'd like to see the rough form for ideas and to help me get it right.

The Division of Ag has also produced a poster for the challenge. For information, visit [www.AlaskaGrown.org](http://www.AlaskaGrown.org) or contact Amy Pettit at [amy.pettit@alaska.gov](mailto:amy.pettit@alaska.gov)

Visit the Alaska AITC website at [www.agclassroom.org/ak](http://www.agclassroom.org/ak)

I trust your school year is off to a great start. Enjoy these fleeting days of summer. If I can be of any help in your quest to make your students agriculturally literate, let me know.

Also, I've revised the Alaska AITC CDs with lots of new lessons and samples from other states. If you'd like one, send me an email or fill out the request form online.

The Division of Ag has CDs on nutrition. They use the old version of the food pyramid and require a Mac to fire up System 9, but they have lots of give out if you can use them. Contact Amy or me if you are interested.

Victoria Naegele

Alaska Agriculture in the Classroom

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[www.agclassroom.org/ak](http://www.agclassroom.org/ak)

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