



MAPPING NATIVE SPECIES AND INVASIVES

Year Round Grades 4-6

DESCRIPTION:

STUDENTS WILL IDENTIFY, COUNT, AND MAP NATIVE AND INVASIVE SPECIES (FROM A SET LIST) THAT CAN BE FOUND ON THEIR SCHOOL GROUNDS. STUDENTS TEAMS OF 2 WILL EACH BE RESPONSIBLE FOR BEING THE EXPERT ON ONE NATIVE AND ONE INVASIVE. OVER THE COURSE OF THE YEAR, THE CLASS WILL GO OUT TO THE GROUNDS, FOCUSING ON ONE SECTOR AT A TIME, AND MAP THEIR FINDINGS. THE CULMINATING PROJECT FOR THIS OUTDOOR MAPPING AND LEARNING EXPERIENCE WILL BE A PRESENTATION BY THE STUDENTS ABOUT WHAT THEY FOUND WAS GROWING ON THEIR GROUNDS, AND HOW THE NATIVE AND INVASIVE SPECIES POPULATIONS INTERACT.

Pre-lesson

- 1. TEACHER WILL NEED LARGE POSTER SIZED MAP OF SCHOOL GROUNDS. GROUNDS' MAP WILL NEED TO BE SPLIT INTO SMALL SECTOR SO THAT STUDENTS HAVE AN AREA TO FOCUS ON FOR EACH EXPLORATION. EACH SECTOR WILL NEED TO BE PRINTED OUT ON A SMALLER PAPER FOR STUDENTS TO RECORD THEIR FINDINGS WHEN OUT IN THE FIELD.**

TEACHER WILL NEED TO CREATE SCHOOL INATURALIST ACCOUNT AS KIDS UNDER THE AGE OF 13 ARE NOT ALLOWED TO HAVE THEIR OWN ACCOUNTS.

- 2. TEACHER WILL NEED TO DIVIDE MAP IN SECTORS THAT ARE SMALL ENOUGH TO BE COVERED BY THE CLASS IN ONE SESSION. I USED**

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DURATION & TYPE OF PROGRAM:

1 MULTIPLE OUTDOOR TRIPS, EACH ABOUT 15-30 MINUTES. INDOOR SESSIONS FOR MAPPING DATA AND DISCUSSING FINDINGS.

MATERIALS

- 1. LARGE MAP OF SCHOOL GROUNDS FOR CLASSROOM, IDEALLY DRAWN ON 2 OR MORE SHEETS OF LARGE CHART PAPER AND CLEARLY LABELED. SATELLITE PICTURE IS NOT THE BEST OPTION, BUT WOULD STILL WORK.**
- 2. SMALL SECTION MAPS OF SCHOOL GROUNDS FOR BRINGING OUTSIDE TO RECORD**
- 3. DIFFERENT COLORED MARKER OR STICKER FOR EACH SPECIES**
- 4. CLIPBOARDS FOR RECORDING DATA OUTSIDE**
- 5. TECHNOLOGY WITH ACCESS TO INATURALIST FOR AIDING STUDENTS IN IDENTIFICATION**
- 6. LAMINATED PRINTOUTS OF SPECIES ID CARDS THAT ARE RELEVANT TO SCHOOL GROUNDS, ATTACHED TO LESSON**

SEE EXAMPLE BELOW OF LARGE MAP FOR



WALL:

- 3. EACH LABELLED SECTION SHOULD BE PRINT OUT FOR STUDENTS TO RECORD UPON WHILE IN THE FIELD. IF WE WERE WORKING ON 3G, I WOULD HAVE THIS ENLARGED AND PRINT FOR EACH STUDENT:**



- 4. STUDENTS SHOULD SPLIT INTO GROUPS OF TWO, EACH TEAM BEING ASSIGNED ONE NATIVE AND ONE INVASIVE SPECIES TO BE EXPERTS ON. STUDENTS SHOULD BE GIVEN LAMINATE CARDS OF THEIR SPECIES TO STUDY AND BE FAMILIAR WITH.**
- 5. EXPLAIN TO STUDENTS THAT OVER THE YEAR THEY ARE GOING TO BE FINDING AND MAPPING THEIR NATIVE AND INVASIVE SPECIES ON THE SCHOOL GROUNDS. SHOW THEM THE BIG MAP ON THE WALL AND EXPLAIN TO THEM THE SECTORS THEY WILL BE WORKING IN. SHOW THEM THE SMALLER GRID PRINT OUTS AND EXPLAIN THAT IS WHAT THEY WILL BE USING TO MAP THEIR SPECIES.**
- 6. IF NECESSARY MAP SKILLS ARE NOT ALREADY PRESENT, MODEL MAPPING THE CLASSROOM INTO SECTORS AND PLACING DIFFERENT TEXTBOOKS AROUND THE ROOM. EACH TEXTBOOK IS A DIFFERENT COLOR. SHOW STUDENTS HOW TO MAP THOSE IN SMALL SECTORS AND TRANSFER ONTO LARGE MAP.**

7. CONES FOR APPROXIMATING AREA OF SECTOR WHILE IN THE FIELD

8. HAND LENSES

GOALS:

- **STUDENTS WILL DEVELOP MAPPING SKILLS BY PLOTTING NATIVE AND INVASIVE SPECIES ON A MAP OF THE SCHOOL GROUNDS.**
- **STUDENTS WILL DEVELOP PLANT IDENTIFICATION SKILLS BY MASTERING THE IDENTIFICATION OF A FEW PLANTS.**

STANDARDS:

5.ESS3.1 OBTAIN AND COMBINE INFORMATION ABOUT WAYS INDIVIDUAL COMMUNITIES USE SCIENCE IDEAS TO PROTECT THE EARTH'S RESOURCES AND ENVIRONMENT.

3.5.ETS1.2 GENERATE AND COMPARE MULTIPLE POSSIBLE SOLUTIONS TO A PROBLEM BASED ON HOW WELL EACH IS LIKELY TO MEET THE CRITERIA AND

7. IF MAPPING THE WHOLE SCHOOL SOUNDS DAUNTING, START SMALL! MAP A SPECIFIC TRAIL, OR SECTION OF TRAIL. ONCE YOU ARE COMFORTABLE MAPPING IN SMALL AREAS, KEEP MOVING AND COVER AS MUCH AS YOU CAN, BUT DON'T FEEL LIKE YOU HAVE TO SQUEEZE IT ALL IN. START WITH AREAS WITH FEWER PLANTS, AND WORK YOUR WAY UP TO AREAS WITH MORE DENSE VEGETATION.

Procedure

- 1. APPROXIMATE AREA OF THE SECTOR AND USE CONES TO MARK THE BOUNDARY CORNERS SO STUDENTS KNOW WHAT AREA TO WORK WITHIN. SHOW THEM HOW TO WALK AROUND AND LOOK FOR THEIR SPECIES. IF THEY DO NOT FIND THEIR SPECIES IN A SECTOR THAT IS PERFECTLY FINE. IF THEY DO, SHOW THEM HOW TO APPROXIMATE ITS LOCATION USING THE CORNERS FOR GUIDANCE. IF THEY ARE NOT YET SURE OF THEIR PLANTS IDENTIFYING FEATURES, THEY CAN USE INATURALIST FOR HELP IN IDENTIFYING.**
- 2. WHEN FIRST STARTING THE PROJECT, IT MAY BE NECESSARY TO REVISIT THE SAME SIGHT TWICE, SO THAT IF STUDENTS ARE USING INATURALIST TO AID IN IDENTIFYING PLANTS, THEY HAVE TIME TO HEAR BACK AND HAVE CONFIRMATION OF SPECIES.**
- 3. SINCE STUDENTS ARE WORKING IN PARTNERS, THEY NEED TO BOTH AGREE ON A SPECIES ID BEFORE MAPPING IT.**
- 4. WHEN RETURNING TO CLASSROOM, HAVE STUDENTS TAKE TURNS ADDING WHAT THEY FOUND TO THE MAP.**

**CONSTRAINTS OF THE
PROBLEM.**

SOURCES:

[HTTP://WWW.GRIDDRAWINGTOOL.COM/](http://www.griddrawingtool.com/)

Post-Lesson/ Conclusion

- 1. SOME DISCUSSION QUESTIONS THAT CAN BE ASKED AFTER EACH SESSION:**
 - 1. WHAT NATIVE SPECIES WAS MOST COMMON WITHIN THE AREA?**
 - 2. WHAT INVASIVE SPECIES WAS MOST COMMON WITHIN THE AREA?**
 - 3. WHAT IS THE RATIO OF NATIVE TO INVASIVE SPECIES?**
 - 4. HOW DO THE CONDITIONS OF THE AREA THAT WE INVESTIGATED AFFECT THE SPECIES THAT GROW THERE? (SHADY AREA, WINDY AREA, LOT OF FOOT TRAFFIC, NOT A LOT OF WATER, ETC.)**
 - 5. DO YOU NOTICE ANY OVERALL TRENDS IN THE DATA WE HAVE COLLECTED?**
- 2. KEEP A RUNNING TOTAL OF NATIVE AND INVASIVE SPECIES FOUND IN EACH GRID AREA, AND OVERALL.**

EXTENSION OPPORTUNITIES:

- A) STUDENTS CAN PROPOSE A HYPOTHESIS ABOUT THE RATIO OF NATIVES TO INVASIVES, AND IT MAY TREND IN THE FUTURE.**
- B) AFTER MULTIPLE YEARS OF DATA, STUDENTS CAN COMPARE FINDINGS TO PREVIOUS YEARS.**
- C) STUDENTS CAN PRESENT FINDINGS TO ADMINISTRATION, POTENTIALLY PITCHING THE REMOVAL OF INVASIVES.**